



Honolulu International Airport

Design Submittal Requirements

June 30, 2009



Airports Division

Department of Transportation
State of Hawaii

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INTRODUCTION

The **Design Submittal Requirements** was written in an effort to establish an efficient, logical and timely work flow progression for all Department of Transportation – Airports Division (DOTA) projects, scopes of work, submittals, deliverables and associated reviews. The requirements & guidelines herein shall apply to all projects. This document consists of two parts: (1) **Design Review & Approvals Process**, (2) **Design Work Scopes**. Descriptions of each section are as follows:

1. **Design Review & Approvals Process** – This section outlines the requirements and procedures for the Designer of Record (DOR) to follow when submitting drawings, specifications, studies and / or other documents deemed instruments of service to the DOTA.
2. **Design Work Scopes** - This section addresses the minimum design scopes of work in each design phase to be performed by the DOR for DOTA projects, including new facilities, additions, renovations and repairs. The **Design Work Scopes** are organized by the following phases of design; Pre-Design, the “Design Effort” (comprised of the Conceptual Design, Schematic Design, Design Development, and Construction Documents), Advertising & Bidding, Construction Administration and Post Construction.

The requirements and guidelines establish the expectations for the DOTA Project Manager (DOTA PM) and the DOR to reference for each phase of service contracted. The DOR shall exercise their professional responsibility to produce quality deliverables and services to meet or exceed the outlined scopes or work, (ie. All documents submitted are expected to be complete, correct and fully coordinated).

Questions, requests and / or suggestions regarding the content of the **Design Submittal Requirements** should be addressed in writing to the DOTA PM. Requests for variation from the established guidelines, procedures or scope of work parameters shall be subject to review and approval by the DOTA PM.

It is the intent of the DOTA to maintain, manage and update the content, methods and procedures set forth in the **Design Submittal Requirements**. As such, this document shall be subject to ongoing evaluation and / or modification. The requirements shall therefore be referred to as a 'living document' subject to updates, revisions and future growth.

CODES & REGULATIONS

The following provides a list of agencies which regulate and set forth the requirements for the HNL design & operations. It shall be the responsibility of the DOR to comply with all applicable codes and life / safety requirements. The requirements set forth by the DOTA HNL are not intended to contradict any code or governmental agency requirements that have jurisdiction over the project. The latest editions of each should be referenced as required.

1. Airport Building Design Standards, Department of Transportation Airports Division State of Hawaii, 2000
2. Americans with Disabilities Act Accessibility Guidelines (ADAAG)
3. Contractor's Training Guide – Honolulu International Airport Operations and Movement Area
4. Comprehensive Zoning Code, by County
5. Environmental Impact Statement – Honolulu International Airport. State Project no. A0134-30. April 1991
6. Environmental Preservation Guidelines, Procedure No. 10.3. State of Hawaii, Department of Transportation, Airports Division
7. Federal Aviation Administration (FAA)
8. Federal Communications Commission (FCC)
9. General Provisions for Construction Projects, Hawaii Department of Transportation Airports Division
10. General Provisions for Construction Projects, Hawaii Department of Transportation Air and Water Transportation Facilities Divisions
11. Guidelines for Cultural Appropriateness
12. Hawaii State Airports Cultural Master Plan
13. Hawaii State Energy Code
14. Hawaii State Requirement for Fine Art, HRS, Section 103.8.5. Section 12100-Artwork
15. Honolulu International Airport Master Landscape Design Plan 1990 – 2000, DOTA
16. Honolulu International Airport Retail Storefront Design Criteria – HIA
17. Honolulu International Airport Security Program
18. Honolulu International Airport Sustainable High Performance Guidelines
19. International Building Code, latest county amended version
20. Leadership in Energy and Environmental Design (LEED)
21. Life Safety Code (NFPA 101)
22. National Electric Code (NEC)
23. National Pollutant Discharge Elimination System (NPDES)
24. Signage & Graphics Design Manual – Interim Supplemental Guidelines
25. State of Hawaii Art Advisory Committee (AAC)
26. Statewide Airport Systems Plan (SASP)
27. Technical Standards for Customs Passenger Processing at Airports Department of the Treasury / U.S. Customs Service.
28. Tenant Improvement Guidelines, Airports Division State of Hawaii 2002
29. Transportation Security Administration (TSA)
30. Uniform Fire Code
31. Uniform Plumbing Code

DESIGN REVIEW AND APPROVALS PROCESS

DESIGN SUBMITTAL PROCESS

The Design Review process will occur at the end of the Pre-Design, Conceptual Design, Schematic Design, Design Development & Construction Documents Phases of the design process. See Figure 1 for Design Review and Approvals Process Workflow Diagram.

Submittal Documents

The DOR shall prepare the design package which include but are not limited to: sketches, working drawings, shop drawings, studies & analysis, specifications and calculations as required to adequately fulfill the Design Submittal requirements. All drawings prepared shall bear the stamp of the Design Professional who is registered and licensed in the State of Hawaii. The DOR shall be responsible for all local codes, ordinances, rules & regulations.

- **Hardcopy Drawings** – All submitted hardcopy drawings shall conform to the DOTA construction drawings and CAD guidelines. The drawings shall incorporate pertinent narratives or support documentation where applicable. All drawings shall be submitted with the DOTA title sheet notating project information, drawing index, project title, project location, State project reference number and signature title blocks. Drawings shall be on 22"x34" or 30"x42" standard State of Hawaii Airports Division DOT title block, unless otherwise instructed by the DOTA PM (see Department of Transportation Airports Division Consultant CAD Guidelines, January 2009).
- **Hardcopy Specifications** – All submitted specifications shall conform to CSI standard format unless otherwise instructed by the DOTA PM. Specification shall be in 8½"x11" booklet form with title sheet and table of contents. The specification title cover sheet shall include project title and location, State project reference number and date (see Department of Transportation Airports Division Consultant CAD Guidelines, January 2009 & General Provisions for Construction Projects, Hawaii Department of Transportation Airports Division).
- **Electronic Formats** – All drawings & specifications shall also be submitted in digital format on compact disk (CD). The CD(s) shall be labeled with Project title, State project reference number, date, disk contents and disk number if multiple disks are submitted. When multiple disks are submitted, an 8½"x11" booklet shall be required with the CD disks. This booklet shall contain a coordinated listing of the disk numbers, titles and their contents.
- **Electronic File Formats** - Acceptable electronic file formats shall include: Autodesk AutoCad "dwg" files, Microsoft Word "doc" files or Adobe "pdf" files. Other digital file types are subject to the approval by the DOTA PM.
- **Design Phase Identification Title Block** – All documents, hardcopy and electronic, shall bear a Design Phase Identification Title Block. (see Appendix A)
- **Release of Copyright** - The DOR shall be required to complete, sign and date the Release of Copyright for all DOR files, drawings and documents deemed instruments of service submitted to the State of Hawaii DOTA.
- **Uploading Electronic Files to the Project FTP Website** - The DOR shall be responsible for a Project FTP Website. The DOR shall be responsible for uploading electronic files to the site for access and use by the DOTA. The DOR shall provide the DOTA PM with FTP website procedures to access project files, including file locations, file format, passwords and other settings or requirements for use during the project.

Design Submittal Form

The Design Consultant shall complete and submit the **Design Submittal Application Form** with each required Design Submittal (see Appendix B). The design submittal documents shall be submitted to the DOTA PM who will then coordinate the design review with the appropriate stakeholders.

Design Review Process – General Requirements for Pre-Design, Conceptual Design, Schematic Design and Design Development Phase Submittals

The DOTA shall review and comment on the required scope of work documents submitted. The date for all required submittals shall be established by the DOTA PM and the DOR prior to the Notice to Proceed. The DOR shall submit the required documents by the designated date. If the DOR cannot meet the established submittal timeframe, they may request for an extension. The DOR shall inform the DOTA PM in writing a minimum of two weeks prior to the deadline with the reason for the requested extension and additional time required for the submittal. The DOTA PM shall initiate the authority to accept or deny the request.

The DOTA PM shall endeavor to review and return documents with comments within 30 calendar days following the date of the submittal for the Pre-Design, Conceptual Design and Schematic Design or 45 days for Design Development, unless otherwise determined by the DOTA PM. Comments from the DOTA shall be in the form of either “red-marks” on the submitted drawings and / or typewritten narratives on the DOTA Document Review Comment Sheet (see Appendix C).

The DOTA PM shall place a “**DOTA REVIEWED**” stamp indicating submittal review status on the title or cover sheet of all submitted documents of that design phase (see Appendix D). The following provides a summary of the possible reviewed document status:

1. **NO EXCEPTIONS TAKEN, SUBJECT TO COMMENTS ON SUBMITTAL** – The DOR shall address and incorporate the DOTA’s comments into the next design phase submittal. No further submittal review will be required as the burden of compliance and follow through will fall upon the DOR. The DOR shall also receive a written notice for completion of the specific phase of work. The DOR shall return the DOTA’s “red-marked” drawings and / or narrative comments with the subsequent design phase submittal.
2. **REVISE & RESUBMIT** - The DOR shall address, incorporate and revise the submitted design documents per the DOTA’s comments. The DOR has 15 calendar days to resubmit for further review, unless otherwise directed by the DOTA PM. The DOR shall return the DOTA’s “red-marked” drawings and / or narrative comments with the resubmitted documents.

Design Review Process - Construction Documents Phase Submittals

The review of the Construction Documents submittal shall be a two step submittal process.
(Note: See following section for Construction Documents Submittal Package Summary)

Step 1 – 100% Final Submittal

The first step in the Construction Documents submittal process is the **100% Final Submittal**. The DOTA PM shall endeavor to review and return documents with comments within 30 calendar days following the date of the submittal, unless otherwise determined by the DOTA PM. Comments from DOTA shall be in the form of either “red-marks” on the submitted drawings and / or typewritten narratives on the DOTA Document Review Comment Sheet (see Appendix C). Upon receipt of the DOTA’s comments, the DOR has 15 calendar days to revise and resubmit for the **Corrected Final Submittal**. The DOR shall return the DOTA’s “red-marked” drawings and / or narrative comments with the **Corrected Final Submittal**.

Step 2 – Corrected Final Submittal

The second step in the Construction Documents submittal process is the **Corrected Final Submittal**. Upon receipt of the **Corrected Final Submittal** documents, the DOTA PM shall issue a written acceptance letter to the DOR. The **Corrected Final Submittal** documents shall bear the State of Hawaii

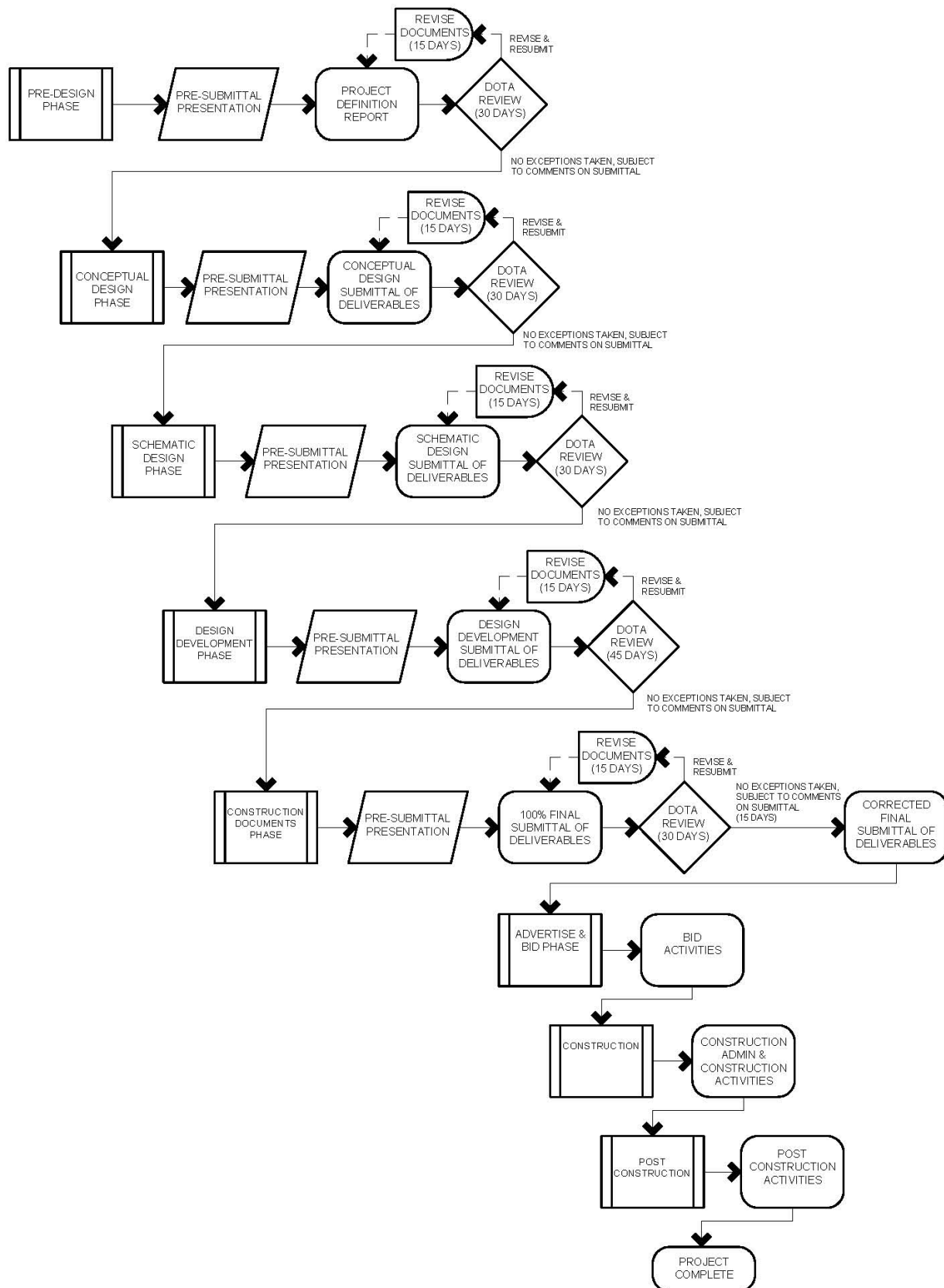
Department of Transportation Signature Title Block on the title sheet of all drawings for the DOTA authorized signature(s) and date (see Appendix E). Only construction documents with these markings can be used for printing & distribution to selected bidders and for record copy to be filed with the DOTA.

Required Permits

All construction projects initiated at the Honolulu International Airport do not require normal building codes review by the City & County of Honolulu Department of Planning & Permitting or its associated departments and / or divisions. **However, the DOR shall be responsible for full compliance with all current State, City and Federal Governments codes, rules and regulations as well as industry standards for life and safety practices.**

If during the course of the project the DOR becomes aware of any other special permitting requirements, the DOR shall be responsible to immediately notify the DOTA PM in writing of such finding. If it is determined by the DOTA PM that the project will require permit approvals outside of the normal Honolulu International Airport project parameters, the DOR shall be responsible for applying, submitting, processing, coordinating & obtaining required approvals for all permits for the project. Special areas of concern may include National Pollutant Discharge Elimination System (NPDES) or Special Management Areas (SMA).

FIGURE 1 - DESIGN & APPROVALS PROCESS WORKFLOW DIAGRAM



DESIGN PHASE SUBMITTALS

Pre-Design Submittal Package Summary

The DOR shall submit the following for review and distribution to the DOTA PM for Pre-Design:

- Completed Design Submittal Application Form
- A minimum of two (2) hardcopies of the **Project-Definition Report (PDR)***
- CD disks with electronic copies of all documents submitted

** The DOR shall verify with the DOTA PM for the number of hardcopies required for this submittal.*

Conceptual Design Submittal Package Summary

The DOR shall submit the following for review and distribution to the DOTA PM for Conceptual Design:

- Completed Design Submittal Application Form
- A minimum of five (5) half-size sets of hardcopy drawings*
- A minimum of two (2) hardcopies of the **Conceptual Basis of Design Report (CBDR)***
- CD disks with electronic copies of all documents submitted
- Upload all submittal documents to the Project FTP website

** The DOR shall verify with the DOTA PM for the number of hardcopies required for this submittal.*

Schematic Design Submittal Package Summary

The DOR shall submit the following for review and distribution to the DOTA PM for Schematic Design:

- Completed Design Submittal Application Form
- A minimum of eight (8) half-size sets of hardcopy drawings*
- A minimum of two (2) draft hardcopies of the specifications*
- A minimum of two (2) hardcopies of the **Schematic Basis of Design Report (SBDR)***
- CD disks with electronic copies of all documents submitted
- Upload all submittal documents to the Project FTP website

** The DOR shall verify with the DOTA PM for the number of hardcopies required for this submittal.*

Note: The DOR shall return the DOTA's "red-marked" drawings and / or narrative comments from the previous design phase submittal.

Design Development Submittal Package Summary

The DOR shall submit the following for review and distribution to the DOTA PM for Design Development:

- Completed Design Submittal Application Form
- A minimum of eight (8) half-size sets of hardcopy drawings*
- A minimum of four (4) draft hardcopies of the specifications*
- CD disks with electronic copies of all documents submitted
- Upload all submittal documents to the Project FTP website

** The DOR shall verify with the DOTA PM for the number of hardcopies required for this submittal.*

Note: The DOR shall return the DOTA's "red-marked" drawings and / or narrative comments from the previous design phase submittal.

Construction Documents Submittal Package Summary

The DOR shall submit the following for review and distribution to the DOTA PM for Construction Documents:

Step 1 – 100% Final Submittal

- Completed Design Submittal Application Form
- A minimum of eight (8) half-size sets of hardcopy drawings*
- A minimum of four (4) hardcopies of the specifications*
- CD disks with electronic copies of all documents submitted
- Upload all submittal documents to the Project FTP website

** The DOR shall verify with the DOTA PM for the number of hardcopies required for this submittal.*

Step 2 – Corrected Final Submittal

- Original full-size drawing set title sheet with the State of Hawaii Department of Transportation signature title block on the title or cover sheet for the DOTA authorized signature(s) and date
- Original corrected specification booklet, unbound (sheets should be loose)
- The DOR shall return the DOTA's "red-marked" drawings & specifications with narrative comments from the previous design phase submittal.

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DESIGN WORK SCOPES

1. Pre-Design Requirements

1.1 General

1.2 Project Definition Report (PDR)

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

1. Pre-Design Requirements

1.1 General

- 1.1.1 Each construction project shall begin with a **Pre-Design Phase**. The intent of the **Pre-Design Phase** is to gather, identify and document all pertinent project information to define the design & construction parameters of the project from which an appropriate design solution can be developed.
- 1.1.2 The DOR shall be responsible for research and review of all related project documents including but not limited to; existing published data, record documents, geotechnical reports, master plans, environmental documents, topographical data and site investigations.
- 1.1.3 The DOR shall create and submit to the DOTA PM a **Project Definition Report (PDR)** at the close of the **Pre-Design Phase**. In summary, the **Pre-Design Phase** shall define the project scope of work, performance criteria, site conditions and budget costs for the DOTA PM's review and approval. The DOTA PM will utilize the findings of the **Pre-Design Phase** to establish the direction of the next project phase.
- 1.1.2 The DOTA PM shall determine based on the anticipated scope of work if a **Functional Analysis Concept Design (FACD)** process is required for the project. The DOTA PM shall task the DOR with the **FACD** process in the following **Conceptual Design Phase**.
- 1.1.3 The **Pre-Design Phase** objectives:
- Establish design criteria / assumptions / limitations
 - Provide facility programming
 - Function of required spaces
 - Space relationships & adjacencies
 - Space requirements – Area of each space (net / gross / efficiency)
 - Special requirements (ie: Leadership in Energy and Environmental Design (LEED) certification / communication / power / energy)
 - Performance criteria for specialized systems
 - Future requirements for anticipated flexibility and expansion
 - Regulatory agencies and constraints
 - Establish and identify site requirements
 - Site selection process, if applicable
 - Site analysis
 - Evaluation of potential sites
 - Criteria & selection of preferred site
 - Perform a project budget analysis
 - Initial cost assumptions
 - Outline of major components & related costs
 - Detailed capital cost estimate
 - Life cycle / Cost benefit analysis / Cost of ownership
 - Coordination with established capital facility plan
 - Determine facility operations & maintenance impacts
 - Create project drawings & diagrams

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

- Site plans (space requirements, relationships & adjacencies)
- Preliminary plans of program elements and functional adjacency alternatives analysis
- Preliminary sections of program elements
- Building volumes study (block diagrams)
- Alternative approaches
- Criteria & selection of the preferred alternative

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

1.2 Project Definition Report (PDR)

Planning / Coordination Services

- 1.2.1 **Pre-Design Phase meeting** – The DOR shall attend all Pre-Design Phase meeting(s) conducted by the DOTA PM to identify and establish the project requirements for the **Project Definition Report (PDR)**. The DOTA project staff and the DOR shall be required to attend. The DOTA PM shall conduct the meeting(s). The DOTA PM shall provide a list of attendees and determine the number of meetings for this phase. The DOR shall document the meeting minutes.

Documents / Forms / Studies Services

- 1.2.2 The DOR shall complete and submit to the DOTA PM the **PDR**. The following items shall be included in the **PDR**:

- Stakeholders List
- Project description
- Project work scope
- Project justification
 1. Identification of need
 2. Evaluation of existing parameters
- Anticipated costs estimates
- Impact if project is deferred
- Discussion of other related projects
- Economic alternatives considered & evaluated
- Environmental impact
- Preliminary hazardous material identification & assessment
- Description of proposed construction
- Site plan and other supporting drawings or sketches
- **PDR** Format: 8½"x11" booklet. Fold-out pages of 11"x17" sheets may be used for graphics, diagrams, drawings etc.

- 1.2.3 The following is a suggested outline for the **PDR**:

- I. Executive Summary
- II. Existing conditions
 - A. Site conditions
 - B. Site deficiencies
- III. Project Description
 - A. Narrative description of project scope
 1. Stakeholder input
 2. List of assumptions
 - B. Location Map
 - C. Site Plan
- IV. Project Justification
 - A. Identification of need
 - B. Impact if project is deferred
- V. Special Requirements
 - A. Property acquisition
 - B. Existing easements – identify & locate

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

- C. List of required construction permits
- D. Conflicts with adjacent or nearby facilities
- E. Associated project work scope to resolve conflicts
- F. Tenant relocations
- G. Temporary facilities required
- H. Tenant commitments or letters of interest
- VI. Site Selection Basis
 - A. Verify suitability of site selected
 - 1. Site description & comparison of options
 - 2. Site recommendation
 - B. Project Constraints
 - 1. Airfield clearance criteria
 - 2. Noise criteria or sound attenuation requirements
 - 3. Building height limitations
 - 4. Setback criteria from roads, airfield, curbs, sidewalks, etc.
 - 5. Environmental protection from contamination
 - 6. Impact to existing pedestrian and vehicular traffic patterns
 - 7. Flood zones and flood plain elevations
 - 8. Future development considerations
- VII. Environmental Requirements
 - A. Environmental permits
 - B. Historical / archeological constraints
 - C. Environmental Assessment or Environmental Impact Statement
 - D. Potential abatement considerations for existing hazardous materials
 - E. Utility requirements such as: underground storage tanks, oil-water separators, water main connections, sanitary sewer connections or wastewater treatment facilities, electrical, drainage, fire protection requirements, etc.
- VIII. Cost Estimate
 - A. The DOR design fees
 - B. Project construction estimate (include utility breakdown as well as breakdown by design discipline)
 - C. Construction management fees
 - D. Procurement of artwork (if applicable)
 - E. Travel expenses
 - F. Cost contingencies
 - G. Other anticipated reimbursable expenses
- IX. Project schedule by number of days in DOTA-approved format
 - A. Design scope of work schedule
 - B. Project construction schedule. Include phasing, if applicable
- X. Cost of ownership analysis accounting for operation and maintenance requirements, life cycle costs to the facility to full depreciation and / or required replacement
 - A. Analysis for State of Hawaii maintained portion of the project
 - B. Analysis for tenant leased portion of the project
- XI. Projected operations and maintenance cost (including additional personnel required)
- XII. Meetings minutes including invitation lists and attendance sheets

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

2. Conceptual Design Requirements

2.1 General

2.2 Conceptual Basis of Design Report (CBDR)

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

2. Conceptual Design Requirements

2.1 General

- 2.1.1 The **Design Effort** shall constitute the following phases: (1) Conceptual Design, (2) Schematic Design, (3) Design Development, (4) Construction Documents. **Successful completion of the Conceptual Design Phase shall constitute 15% completion of the Design Effort.**
- 2.1.2 The **Conceptual Design Phase** shall follow the successful completion of the Pre-Design Phase. The scope of work involved in the **Conceptual Design Phase** can be described as a more focused and systematic approach of data collection and analysis. The **Conceptual Design Phase** aims to further define the project's functional requirements and provide the DOR with a clear understanding of the project's specific needs. Design elements shall be identified and translated into specific requirements from which potential design solutions can be developed. This phase will involve numerous meetings with the involved parties to collectively reach a clear understanding of the objectives that affect the project's design and functionality.
- 2.1.3 The DOR shall create and submit to the DOTA a **Conceptual Basis of Design Report (CBDR)** at the close of the **Conceptual Design Phase**. The **CBDR** shall further develop the project design objectives along with the DOTA feedback from their review of the previously submitted **PDR**.
- 2.1.4 The **Conceptual Design Phase** drawings and documents shall be submitted to the DOTA for review and approval. The DOR shall revise and resubmit drawings and documents as required by the DOTA until the DOTA issues written approval of the **Conceptual Design Phase** documents.
- 2.1.5 **Sustainable Design**
- 2.1.5.1 **Eco-charrette** - The DOR team shall participate in an **Eco-charrette**. The intent of this process is to present multiple alternatives to be evaluated by the Honolulu International Airport Sustainability Committee (HNL SC) in accordance with the Honolulu International Airport Sustainable High Performance Guidelines (HNL SHPG). The result of the Eco-charrette is to determine the extent to which the HNL SHPG will be implemented into that particular project. The HNL SC shall determine if additional **Eco-charrettes** shall be conducted to study or evaluate new alternatives presented.
- 2.1.5.2 **Leadership in Energy and Environmental Design (LEED) Certification** - The HNL SC shall determine if LEED Certification for the project will be pursued.
- 2.1.6 If required by the DOTA PM, the DOR team may participate in a **Functional Analysis Concept Development (FACD)** process to assist

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

in the development of the **CBDR**. This process involves concentrated on-site work sessions to define the project parameters from which design concepts can be developed.

2.1.7 The **FACD** process objectives:

- **Gather of Information** – Complete project related research to formulate design concepts and theories
- **Speculation** – Attend meetings and document discussions with all involved decision making entities to set the parameters for possible design solutions
- **Concepts and Analysis** – Create possible design alternatives based on the information collected
- **Support Information** – Provide support documentation for design solutions suggested or recommended
- **Presentation** – Create approved design documents which illustrate the design solution agreed upon based on the input, discussions and agreement of all involved parties

2.1.8 The DOR shall be responsible for a formal presentation to the DOTA of the completed **Concept Design Phase** documents. This presentation shall include sufficient detail to demonstrate that all the requirements of the project are identified, understood and addressed. This presentation shall also include a detailed description of the code requirements and accessibility criteria incorporated in the documents to insure applicable code compliance. Comments from this presentation shall be documented, addressed and incorporated into the **CBDR**.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

2.2 Conceptual Basis of Design Report (CBDR)

- 2.2.1 The DOR shall complete and submit to the DOTA the **Conceptual Basis of Design Report (CBDR)**, including plans, preliminary sections and perspective sketches and models (if deemed necessary by the DOTA), to ensure full comprehension of the design solution. The DOR shall provide the DOTA with alternative design solutions and approaches for consideration. In addition, all solutions considered and presented to the DOTA, but not selected, shall also be included with a narrative stating reasons why solutions were not considered.

Planning / Coordination Services

- 2.2.2 Arrange and coordinate meetings with pertinent parties to research, gather data, define work scope, establish design parameters and collect technical information as required to provide calculations and / or analysis for the **CBDR**.
- 2.2.3 Provide a statement and evaluation of concepts and measures proposed to ensure energy and water conservation.
- 2.2.4 Provide a general description of architectural, engineering, and construction concepts.
- 2.2.5 Provide a general description of any specialized systems considered for the project for architectural, structural, civil, plumbing, fire protection, mechanical (HVAC) exhaust systems, 100% outside air systems, automated people mover (APM) systems, elevators, electronics, security, controls, etc.
- 2.2.6 Provide a list of all major, long lead items, products and intended vendors considered for the project.
- 2.2.7 Provide plan for project security during construction and post construction.
- 2.2.8 Submit project schedule.

Documents / Forms / Studies Services

- 2.2.9 Provide a list to identify all required feasibility studies to be pursued and completed.
- 2.2.10 Identify all required permits, including those pertaining to environmental regulation.
- 2.2.11 Provide preliminary summary of application of codes, including those pertaining to environmental regulation.
- 2.2.12 Perform and submit a detailed analysis of all major systems and / or building components that are proposed or impacted by the project: geotechnical, foundations, utilities (water, sewage, drainage), environmental (wetlands) contaminated materials, transportation, traffic, site / civil, architectural, structural plumbing, fire protection, security, etc.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

- 2.2.13 Provide discussion of options for all anticipated systems, equipment, materials and technical options incorporating options considered, advantages, disadvantages, budget costs, and recommendations. The discussion shall also identify concerns, linkages, and efficiencies.
- 2.2.14 Provide a description of the known soil conditions, potential contaminated soils, asbestos, ground water conditions, existing pavement, wetlands, streams, and buffers, floodplains, zoning including road rights-of-way, accessibility, utility services, governing codes, etc.
- 2.2.15 Complete topographic studies of the terrain, emphasizing features that contribute to the solution or require significant alteration for a solution.
- 2.2.16 Storm water study – provide technical narrative for storm water runoff, displacement and retention systems considered. Coordinate with HNL Storm Water Management Program Plan (SWMPP).
- 2.2.17 Complete site survey. Provide and incorporate findings and information.
- 2.2.18 Provide plan for accessibility compliance.
- 2.2.19 Provide technical narrative of structural systems existing and proposed.
- 2.2.20 Provide preliminary calculations for existing and proposed mechanical and electrical systems.
- 2.2.21 Provide report to identify the minimum requirements for the design and installation of automatic fire sprinkler systems including the adequacy of water supplies and pressures.
- 2.2.22 Provide technical narrative of electrical systems, lighting, permanent / emerging 'uninterruptible power supplies' (UPS) system requirements.
- 2.2.23 Provide technical narrative of plumbing systems including preliminary listing of all systems considered.
- 2.2.24 For projects with 100% outside air and specialized HVAC systems, the DOR shall provide technical narrative of proposed systems.
- 2.2.25 Provide simulation studies for air, vehicular or pedestrian movement.
- 2.2.26 Communications study - provide a technical narrative of communication systems including preliminary listing of all systems to be used including discussion of options for equipment. Include all considered options, advantages, disadvantages, budget costs, and recommendations.
- 2.2.27 Natural gas study – provide technical narrative of options for use of natural gas systems with estimate of gas demand, BTUH, identification of source of supply and meter location.
- 2.2.28 Fueling study - provide technical narrative of options for fueling.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

2.2.29 Provide narrative for project signage and graphics.

2.2.30 Provide narrative for project fire protection and evaluation of options therein. Include all detection systems considered.

Drawings / Graphics / Illustrations Services

2.2.31 The DOR team shall participate in an **Eco-charrette** (see HNL SHPG, Appendix: Eco-charrette Guidelines for requirements). Identify achievable sustainability processes and systems to be considered for the project based on the HNL SC in accordance with the HNL SHPG. Document findings and provide a summary of points to be pursued.

2.2.32 Provide copy of the existing Master Plan drawings showing the location of the project and a demonstration of the DOTA Comprehensive Master Plan's intent for the project.

2.2.33 Provide a project Site Master Plan with diagrammatic indications, showing the relationship of all existing components, site utilities and circulation elements, including consideration for further site development consistent with any Master Plan infrastructure requirements.

2.2.34 Provide scaled line drawings or sketches of plans and sections adequate to define horizontal and vertical relationships of the various project components, and adjacent buildings along with sketches to define the initial concept and direction of the project.

2.2.35 For additions or renovations to existing renovations, provide a plan showing existing and proposed facilities in their relative arrangement and relationship.

2.2.36 Provide scaled architectural models and perspective renderings. (note: Scaled architectural models and perspective renderings are usually not required in the **CBDR** as a basic service of the agreement unless requested by the DOTA PM).

Cost Estimating Services

2.2.37 Provide list to identify anticipated offsite infrastructure costs for the project. (ie. mitigation costs for utilities, roadways, etc.) If a mitigation plan is required for the project, the DOR may be required to develop the plan.

2.2.38 Provide cost estimate with breakdowns and space analysis correlated to the project requirements and approved budgets, including any offsite infrastructure costs.

Construction Specification Services

2.2.39 Provide construction specifications. (note: construction specifications are usually not required in the **CBDR** as a basic service of the agreement unless requested by the DOTA PM).

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

3. Schematic Design Requirements

- 3.1 General
- 3.2 Schematic Basis of Design Report (SBDR)
- 3.3 Architectural Systems
- 3.4 Civil and Environmental Systems
- 3.5 Geotechnical Systems
- 3.6 Structural Systems
- 3.7 Mechanical Systems
- 3.8 Electrical Systems
- 3.9 Instrumentation and Control Systems
- 3.10 Landscaping Systems
- 3.11 Fire Protection Systems
- 3.12 Special Systems - Communication
- 3.13 Special Systems - Security

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

3. Schematic Design Requirements

3.1 General

- 3.1.1 The **Design Effort** shall constitute the following phases: (1) Conceptual Design, (2) Schematic Design, (3) Design Development, (4) Construction Documents. **Successful completion of the Schematic Design Phase shall constitute 30% completion of the Design Effort.**
- 3.1.2 The **Schematic Design Phase** shall follow the successful completion of the Conceptual Design Phase that established the project scope and budget. The **Schematic Design Phase** will develop the design, scale, relationship, and identify the various components of the project. The **Schematic Design Phase** shall identify design constraints and critical issues to be resolved. During this phase, building layout, room adjacencies, elevations and site planning are defined. Building materials and finishes are identified for both the interior and exterior. Major building systems and components are selected, including mechanical, electrical, structural and lighting.
- 3.1.3 The DOR shall create and submit to the DOTA a **Schematic Basis of Design Report (SBDR)** at the close of the **Schematic Design Phase**. The **SBDR** shall entail a more detailed analysis and refinement of the information and findings of the completed **PDR** and the **CBDR** as well as additional information and / or studies performed or required. This **SBDR** shall incorporate more specific information, drawings, detailed cost estimates, detailed design and construction schedules, etc.
- 3.1.4 The **Schematic Design Phase** drawings and documents shall be submitted to the DOTA for review and approval. The DOR shall revise and resubmit drawings and documents as required by the DOTA until the DOTA issues written approval of the **Schematic Design Phase** documents.
- 3.1.5 The DOR shall be responsible for compliance with the DOTA CAD standards for digital files formatting.
- 3.1.6 The DOR shall be responsible for a formal presentation to the DOTA of the completed **Schematic Design Phase** documents. This presentation shall include sufficient detail to demonstrate that all the requirements of the project are identified, understood and addressed. This presentation shall also include a detailed description of the code requirements and accessibility criteria incorporated in the documents to insure applicable code compliance. Comments from this presentation shall be documented, addressed and incorporated into the **SBDR**.

3.2 Schematic Basis of Design Report (SBDR)

- 3.2.1 The DOR shall complete and submit to the DOTA the **Schematic Basis of Design Report (SBDR)** including project description and support documentation (sketches and drawings) to fully describe the basis of design and the proposed design features.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

Planning / Coordination Services

- 3.2.2 Arrange and coordinate design review meetings with the DOTA PM and all involved parties to obtain feedback, comments and perform work sessions to resolve any identified issues. The DOR shall continue discussions with the DOTA / User groups throughout the Schematic Design Phase to further clarify the systems requirements, design basis and cost.
- 3.2.3 Provide updated project schedule and cost estimate. Verify current project schedule and cost estimate with the **CBDR**. If discrepancy in information is found, prepare a variance report for submittal and review by the DOTA.
- 3.2.4 Provide listing of reference documents from previous relevant construction projects.
- 3.2.5 Provide design criteria and identify critical design issues.
- 3.2.6 Provide project analysis with recommendations to identify additional services and associated costs required to complete the Schematic Design Phase (ie. additional soils borings and soils samples / testing, detailed cost estimates, architectural scaled models and architectural colored renderings).
- 3.2.7 Provide narrative to describe the structural system used for vertical and lateral loads and establish all design loads.
- 3.2.8 Provide narrative to identify key decisions that affect the proposed structural systems selection and construction.
- 3.2.9 Provide list to identify all codes to be used and considered. Include a listing of permit requirements including environmental. Address anticipated issues for codes and / or permitting compliance. Provide alternates and / or solutions, waivers and variances to be pursued and / or considered. Provide the associated adjustments to the project schedule.
- 3.2.10 Conduct research and document findings for all past DOTA construction documents relating to existing structures in the project area. Include past studies or documents (ie. soils investigations, surveys and utilities).
- 3.2.11 Provide narrative description of existing zoning or other site conditioning factors that create restrictions for the proposed development scope of work. As a part of this narrative, provide proposed solutions or recommendations for resolving the restrictions identified.
- 3.2.12 Provide plan for compliance with ADA requirements and coordinate requirements with Disability and Communication Access Board (DCAB).

Documents / Forms / Studies Services

- 3.2.13 Provide study to identify special mechanical systems considered. Provide narrative for discussion of system options, advantages / disadvantages and anticipated costs to be included in the project budget. Also include economic

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

lifecycle and cost / benefit analysis.

- 3.2.14 Provide general descriptions, analysis, and sketches of the design and construction concepts for architectural, structural, plumbing, fire protection, mechanical systems (HVAC), communications, electronics and the electrical systems.
- 3.2.15 Provide soils report to address and identify soils design criteria for the project.
- 3.2.16 Provide list or schedule to identify building or construction materials proposed and reason for their use.
- 3.2.17 Provide study to identify anticipated electrical requirements for the project. Include estimate of KVA load and identification of source and adequacy of supply. The DOR shall schedule to meet with the DOTA PM to get direction for the electrical requirements, where to connect, and / or to determine the appropriate course of action if a shortfall in capacity is determined. Include an estimate of associated design and construction costs to resolve the anticipated shortfall.
- 3.2.18 The DOR shall provide a confirmation statement that the utility and distribution system are sufficient to serve the projected capacity of the project.
- 3.2.19 Provide study to identify utility systems demand loads for the project. If a shortfall in capacity is determined, the DOR shall schedule to meet with the DOTA PM to determine the appropriate course of action. Also include an estimate of associated design and construction costs to resolve the anticipated shortfall.
- 3.2.20 Provide study for anticipated and associated water demands for the project. Include calculation allowances for potable water, fire protection, storm, and sanitary sewer. Identify design quantities in gallons per day, source / type of water supply and method of sewage, and oil / water separator disposal. Analysis of capacity of supply and disposal sources. Provide discussion of any permit requirements.
- 3.2.21 Provide study for anticipated chilled water requirements for the project. Include estimates of load and flow rate required and identification of source of supply. Provide discussion and analysis of adequacy of offsite pipe capacity.
- 3.2.22 Provide additional studies and associated reports as they pertain to the project for the following issues: topographical, geotechnical, archeological, etc.
- 3.2.23 Provide study for anticipated irrigation water. Include design values for number of gallons per day required and identification of supply source. Provide discussion of any permit requirements.
- 3.2.24 Provide documentation showing use / integration of energy conservation and sustainable design as required by the HNL SC in accordance with the HNL SHPG and / or LEED equivalency compliance where applicable.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

- 3.2.25 Provide study for preliminary constructability analysis for construction. Include the following:
- Constraints of the work site and mobilization areas
 - Cost effectiveness and function of the proposed system(s)
 - Projected labor or material shortages
 - Points of connection for temporary facilities
 - Sole source or proprietary items
 - Long lead and schedule sensitive items
 - The DOTA ongoing operations
 - Convenience to the public
 - Safety and security of the public
 - Aesthetics and safety of temporary construction barriers
 - Proposed construction cost and schedule
 - QC / QA adequacy

Drawings / Graphics / Illustrations Services

- 3.2.26 Provide site plans showing existing and proposed roads, walks, circulation elements, utility systems, plantings, and special site features.
- 3.2.27 Provide demolition and interfacing plans to ensure safe and compliant removal of debris.
- 3.2.28 Provide plans to identify the location of utilities required or affected.
- 3.2.29 Provide drawings and illustrations to include building and / or facility floor plans, life safety plans, building elevations, and building sections. Drawings shall also include other sketches or diagrams to adequately convey the design concept.
- 3.2.30 Provide drawings and illustrations to include existing buildings on the site. Drawings should show general arrangements / relationships with the existing building and significant site features. Drawings shall be scaled with pertinent dimensions, notes and / or references.
- 3.2.31 Provide detailed drawings for specific layouts of complex areas such as toilet rooms, or other spaces that must meet or serve specific functions, equipment or regulations.

Cost Estimating Services

- 3.2.32 Provide cost estimate comparison between anticipated costs and approved budget organized by area or spaces of the project. Include separate line items for additional funding of identified or anticipated off-site utilities cost.

Construction Specifications Services

- 3.3.1 Provide list of master specifications divisions for the project (CSI format).

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

3.3 Architectural Systems

Planning / Coordination Services

- 3.3.2 Conduct meetings with the DOTA PM and provide support information to establish an appropriate architectural theme for the project.
- 3.3.3 Create list of rooms or spaces (organize by floor, room name, room number) and establish preliminary room sizes based on intended use / function and occupancy.
- 3.3.4 Provide list to identify building materials for interior and exterior surfaces.
- 3.3.5 Provide list to assign heights to building or other structure types. Identify structures that may require application for FAA 7460 permit. If permit is required, prepare support information for application and submittal.
- 3.3.6 Perform building code check to assign building code classification to each building, structure or space. Coordinate building code check assumptions with the local code officials to verify code finding and parameters.
- 3.3.7 Perform building code review of existing facilities affected by the proposed project. Document areas or facilities that do not meet current codes and will require retrofit / rehabilitation. Include an implementation plan to correct building code non-conformance.
- 3.3.8 Provide list and type of proposed interior and exterior signage. Provide for compliance with the DOTA requirements, standards, and guidelines as well as for accessibility.

Documents / Forms / Studies Services

- 3.3.9 Provide study and support documentation for general interior and exterior construction materials for each building. Include cost / benefits analysis for each material selected.
- 3.3.10 Provide study and support documentation for proposed roof type for structure, shape, proposed slopes, support system, insulation and weatherproof membrane / system for each building.
- 3.3.11 Provide list of hazardous or government regulated chemicals and anticipated amounts to be used. Include justification and any special requirements.
- 3.3.12 Provide study and support documentation for compliance with air traffic control tower (ATCT) line-of-sight requirements for proposed buildings and / or structures. Include compliance documents and drawings for 7460 clearance approvals.
- 3.3.13 Provide study to inspect, identify and address accessibility (ADA) issues for the existing or proposed project design. Provide recommendations and solutions for areas of potential non-conformance. The study shall also provide a cost /

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

feasibility analysis impacts (if any) to identify and verify recommended implementation procedures and the associated cost.

Drawings / Graphics / Illustrations Services

- 3.3.14 **Site Survey** - Provide a coordinated boundary survey and / or site topographic survey with the proposed building or construction site over-layed. All points of reference shall be tied to the existing Airport Coordinate System. Include existing overhead and / or underground utilities.
- 3.3.15 **Site Plans** - Provide an overall scaled and dimensioned site plan showing all existing buildings, facilities, contours, roadways, utilities, and other items relevant to the proposed project area. Indicate layout of the proposed roadways, access drives, parking areas, site utilities and proposed building location(s).
- 3.3.16 **Demolition Plans** - Provide scaled and dimensioned demolition plans with existing conditions and items to be removed per the proposed project. Include all pertinent building references as well as identify items to remain or be recycled.
- 3.3.17 **Floor Plans** - Provide scaled and dimensioned floor plan(s). Floor plan information shall include materials designation, graphics legend, walls, columns, partitions, expansion joints, structural grids, room names and numbers, equipment, clear floor spaces, required accessible paths of travel, required exit paths and other pertinent information.
- 3.3.18 **Reflected Ceiling Plans** - Provide scaled and dimensioned reflected ceiling plan(s). Reflected ceiling plans shall include materials designation, graphics legend, walls, columns, ceiling heights, lighting concepts, expansion joints, structural grids, room names and numbers, equipment and other pertinent information.
- 3.3.19 **Roof Plans** - Provide scaled and dimensioned roof plan(s). Roof plans shall include materials designation, graphics legend, equipment, roof drains, overflow drains, gutters, expansion joints, roof scuppers, roof scuttle locations, parapets, flashing areas to be detailed, roof slopes, skylights, vents, roof jacks, equipment curbs, equipment screening, structural grids and other pertinent information.
- 3.3.20 **Exterior Elevations** - Provide scaled and dimensioned building or structure exterior elevations. Exterior elevations shall include materials designation, graphics legend, windows and louvers, landscaping, assumed floor plans and reference elevations, expansion joints, structural grids and architectural design features. Significant height or relationships to existing or adjacent structures should be delineated.
- 3.3.21 **Building Sections** - Provide scaled and dimensioned building sections. Building sections shall include materials designation, graphics legend, assumed floor plans and reference elevations, expansion joints, structural grids, waterproofing, mechanical and electrical systems, equipment locations, areas to be detailed and architectural design features.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

- 3.3.22 **Enlarged or detail floor plans** – Provide detailed or enlarged floor plans for areas requiring additional information for clarity. Provide detailed or enlarged plans for the following: bathrooms, stair and stairwells, technical areas, or areas requiring higher level of detail.
- 3.3.23 **Signage plans** – Provide floor plans with signage locations. Coordinate signage types, mounting and conditions to be detailed.
- 3.3.24 **Preliminary Interior elevations** – Block-out preliminary interior elevations with room materials, built-in cabinetry, equipment locations, fire alarm pull stations and extinguishers, architectural features and room heights indicated. Indicate areas to be detailed.
- 3.3.25 **Detail Drawings** - Provide scaled drawings for conditions that require additional information and detail.
- 3.3.26 **Airfield Projects** – Provide the following information and documents for projects with **Airfield** designation:
- 3.3.26.1 Provide site plan to include all existing terminals, runways, taxiways, taxilanes, aprons, ground support equipment areas, emergency roads, building and structures, contours, underground utilities, or signs in the immediate area of the project site or relevant to the proposed work. Provide coordinated drawings with the HNL Airport Drainage Map to identify the outfall number for drainage.
- 3.3.26.2 Provide drawings to locate and identify all existing FAA NAVAIDS, duct banks, guidance signs, lighting fixtures, electrical ducts, vaults, hand-holes, and circuits.
- 3.3.26.3 Provide drawings to indicate layouts of proposed paving, drainage, and electrical improvements.
- 3.3.26.4 Provide drawings to indicate limits and dimensions of all object free areas, all locations of proposed buildings, safety areas, exclusion zones, NAVAIDS, critical areas, AOA fences, other site structures and FAR Part 77 airspace surfaces that affect project site. This shall be developed in coordination with 7460 compliance requirements and submittals.

Cost Estimating Services

- 3.3.27 Provide updated construction cost estimate. Provide a cost estimate comparison between anticipated costs and approved budget organized by area or spaces of the project.

Construction Specifications Services

- 3.3.28 Provide draft specifications for the project (CSI format). Also include draft copy of the following sections per the DOTA standards:
- Notice to Bidders

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

- Instructions for Contractor's Licensing
- Special Provisions
- Supplemental Special Conditions
- Airports Division Supplement to Special Provisions
- Notice of Requirement for Affirmative Action to Ensure Employment Opportunity (if required)
- General Information Regarding Disadvantage Business Enterprises (if required)
- Regulatory Requirements for Federal-Aid Projects Regarding Disadvantage Business Enterprises (if required)
- Required Federal-Aid Contract Provisions (if required)

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

3.4 Civil and Environmental Systems

Planning / Coordination Services

- 3.4.1 Provide for meetings and discussion with the DOTA PM to determine the extent to which Airport site system reference coordinates will be integrated into the project. Identify potential conflicts or shortfalls with system integration and provide solutions to remedy issues identified. Finalize system integration (or extent of exclusion) and methods for implementation.
- 3.4.2 Conduct and complete research to verify legal definition of the project area, ownership, lease boundaries, property boundaries, required permitting, zoning or governmental constraints. Identify conflicts or discrepancies and provide options for issues identified. Document findings and submit to the DOTA PM for review and comment.
- 3.4.3 Conduct and complete research to evaluate the need for erosion control at the proposed project site. Identify applicable design constraints associated with erosion control and propose options for issues identified. Document findings and submit to the DOTA PM for review and comment.
- 3.4.4 Provide for meetings and discussions with the DOTA PM and pertinent parties to determine emergency vehicle access requirements. Document findings and submit to the DOTA PM for review and comment. Provide for emergency vehicle access in site layout.
- 3.4.5 Provide for meetings and discussions with the DOTA PM to address requirements for local storm water, erosion and sediment control. Research to determine permitting requirements for the site and the impact of those requirements for the preparation of contract documents. Provide recommendations for environmental mitigation. Document findings and submit to the DOTA PM.
- 3.4.6 Provide determination of structure footprints, location, elevation and orientation.

Documents / Forms / Studies Services

- 3.4.7 Provide study to confirm adequacy of topographical and boundary mapping. Document findings and submit to the DOTA PM for their records.
- 3.4.8 Provide study for facility occupant and use to determine number of required parking stalls for both employees and visitors to the facility. Provide suggestions to designated parking areas of existing areas where parking can be accommodated. Document findings and submit to the DOTA PM.
- 3.4.9 Provide field investigation study to evaluate existing pavement conditions. Document findings and submit to the DOTA PM. Provide recommendations for improvement.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

- 3.4.10 Provide study to evaluate project impacts and design constraints associated with flood plains, drainage basins, wetlands, sensitive area buffers, areas of hazardous waste and/or contaminated soil, flood plain impacts / constraints and all other applicable environmentally sensitive areas. Document findings and submit to the DOTA PM. Provide recommendations for improvement.
- 3.4.11 Provide study to verify site signage compliance with DOTA guidelines, standards and ADA if applicable. Document findings and submit to the DOTA PM. Provide recommendations for areas that require correction or adjustments.
- 3.4.12 Provide study to determine whether retrofit of existing storm water discharge system / facilities is required. Include information to identify and locate new storm water outfalls anticipated by the project. Provide recommendations for new storm water discharge management (ie: bio-swales, curb, culverts, and gutter). Document findings and submit to the DOTA PM.
- 3.4.13 Provide narrative to define sewers and sewage disposal systems. Provide an explanation of existing systems including the type, capacity, condition, present flow, and unsatisfactory elements or components, the interpretations of the degree of treatment necessary by field requirement and units necessary for treatment, a statement of the design factors with present design population per various units for the sewage treatment plant, statement of materials to be used for the sewage system, sewage collection system, and the sewage treatment plants, means of effluent disposal. Document findings and submit to the DOTA PM.
- 3.4.14 Provide narrative to define domestic water and fire protection supplies. Identify source, minimum and maximum pressure at each building and in the system, and an explanation of the existing system covering particularly the type, capacity, condition, present water use, and unsatisfactory elements of the component parts, a statement of the type of construction proposed, materials for water mains or wells, the distribution system, a statement of design, domestic and fire flow usage of well pressure, elevation differential, and the designers' basic estimate of tentative pipe sizes, a statement of tentative sizes, elevations and capacities as can be readily determined without long computations or design consideration for reservoirs, treatment units, pumping plants, well pumps and such units. Document findings and submit to the DOTA PM.
- 3.4.15 Provide narrative to define all requirements for all aviation related equipment (ie: passenger boarding bridges (PBB), PWC's, Pre-conditioned air (PCA), 400 Hz provisions, etc).
- 3.4.16 Provide narrative to define gas supply for the project. Provide statement of type, location of takeoff from supply, and available pressure, statement of type and material for pipes and valves. Document findings and submit to the DOTA PM.
- 3.4.17 Provide narrative to define liquid petroleum products. Provide statement to address the following: unloading facilities (ie: dock, tank car, or truck), description of the type of system and proposed features, statement of the basis for storage capacity, rate of pumping, and number of dispensing outlets, description of power

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

supply and power requirements, selection of type of materials for pipes, tanks and valves. Document findings and submit to the DOTA PM.

- 3.4.18 Provide narrative to define hot water distribution. Provide data to include points of connection, pressure, size, material and method of installation of proposed piping. The peak demand of the building on the central steam plant and verification that sufficient capacity exists, shall also be included. Document findings and submit to the DOTA PM.

Drawings / Graphics / Illustrations Services

- 3.4.19 **Topographical Survey Plan** – Provide scaled and dimensioned site topographical plan survey of the project area and adjacent areas pertinent to the project.
- 3.4.20 **Site Demolition Plan** – Provide scaled and dimensioned site plans with existing conditions and items to be removed per the proposed project civil engineering scope of work.
- 3.4.21 **Site Plan** – Provide scaled and dimensioned site plans with building footprints (establish finished floor levels), site topographical information coordinated, reference spot elevations, area designations, site boundaries, setbacks, building footprint reference elevations, driveways, roadways and other pertinent site information. Establish preliminary finished grades, overall major surfaces, roads, walkways, paths and other proposed hard surfaces. Site plan drawings to include coordinated information from DOTA Environmental. Indicate location of streams, wetlands, and their buffers, floodplains, hazardous waste / contaminated soil areas, and other environmentally sensitive areas as they pertain to the project area.
- 3.4.22 **Site Grading Plan** - Provide site grading plan including the following: easements, site improvements, reference elevations, existing or new grade contour lines, locations of storm and drainage lines and catch basins with invert elevations, storm water detention / retention facilities or systems.
- 3.4.23 **Site BMP Drainage Plan** - Provide grading and drainage site plan including the following: easements, construction barricades, filter socks, access roads, reference elevations, existing or new grade contour lines, locations of existing and proposed storm and drainage inlets and lines and catch basins with invert elevations, storm water detention/retention facilities or systems. Locate new and/or existing storm water and IWS management facilities on the plans.
- 3.4.24 **Site Utility Plans** - Provide utilities site plan including the following: easements, locations of all site improvements, locations of all above and below ground utilities including power, exterior lighting, domestic water, fire mains, hydrants, sanitary sewer, storm water drainage, natural gas, fuel lines, steam lines, communications and NAVAIDS. Provide locations of all valves, meters, vaults, manhole covers, pull boxes, and other related items or structures.
- 3.4.25 **Construction Traffic Flow Plans** - Provide scaled plan with proposed traffic flow during construction for access onto, off and around the project area.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

- 3.4.26 **Roadway Layout Plans** - Provide scaled plan with new and existing layout for roadways. Include truck access corridors and maneuvering requirements.
- 3.4.27 **Parking areas or structures** - Provide scaled and dimensioned parking area plans. Provide parking area and stall size and locate parking lots required. Provide parking counts and parking stall type composition. Prepare pavement analysis and striping site plan indicating the following: easements, locations of all driveways, parking areas with parking stalls (new and existing), sidewalks and curbs, parking spaces required by code and legend.
- 3.4.28 **Water and Sewer Profiles** – Provide scaled drawings to indicate piping profiles. Include reference elevations, station points and inverts, etc.
- 3.4.29 **Drain Profiles** – Provide scaled drawings to indicate drain piping profiles. Include reference elevations, station points and inverts, etc.
- 3.4.30 **Detail Drawings** - Provide scaled drawings for conditions that require additional information and detail.

Cost Estimating Services

- 3.4.31 Provide updated construction cost estimate. Provide a cost estimate comparison between anticipated costs and approved project budget.

Construction Specifications Services

- 3.4.32 Provide draft specifications for the project (CSI format).

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

3.5 Geotechnical Systems

Planning / Coordination Services

- 3.5.1 Provide for meetings and discussion with the DOTA PM to determine site-specific geotechnical conditions and requirements for each facility and structure. Submit to the DOTA PM the findings and recommendations along with plan for implementation of work, study or investigations to be conducted.

Documents / Forms / Studies Services

- 3.5.2 Provide soils testing and soils studies to evaluate project impacts to existing soils condition and composition. Provide recommendations for foundation design requirements and parameters. Provide coordination with the DOTA PM for test boring standards and procedures. Provide recommendations for shoring and bracing requirements, erosion control, permeability and dewatering issues. For deep borings, include study of existing groundwater conditions. Submit bound report of geotechnical investigations including pertinent documents and support information.

Drawings / Graphics / Illustrations Services

- 3.5.1 **Boring Location Plan** – Provide site plan with geotechnical boring locations. Coordinate information with Civil engineer. Provide copy of corresponding soils boring logs, notes or information.

Cost Estimating Services

- 3.5.2 Provide updated construction cost estimate. Provide a cost estimate comparison between anticipated costs and approved project budget.

Construction Specifications Services

- 3.5.3 Provide draft specifications for the project (CSI format).

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

3.6 Structural Systems

Planning / Coordination Services

- 3.6.1 Provide for meetings and discussion with the DOTA PM to determine parameters for the selection of the building structural system. Document findings and recommendations for structural design concepts and related cost analysis and submit to the DOTA PM for review and comment.
- 3.6.2 Provide for meetings and discussion with the DOTA PM for proposed building and structural support systems layouts. Coordinate and incorporate the DOTA requirements to address maintenance or operational needs pertaining to the design. Provide research and interface with the main terminal seismic requirements.
- 3.6.3 Provide for meetings and discussion with the DOTA PM and geotechnical engineer to coordinate and establish design criteria for the foundation design of the proposed facilities.
- 3.6.4 Provide narrative summary of the structural design concept for each building and structure. Submit structural design summary to the DOTA PM for review and comment.

Documents / Forms / Studies Services

- 3.6.5 Provide structural design analysis for existing buildings or facilities that require upgrade or modifications. Include existing conditions and identify sub-standard elements. Provide recommendations where structural retrofit or modifications are required. Identify areas where corrections can be implemented. The study shall also provide a cost / feasibility analysis to identify and verify recommended implementation procedures and the associated cost.
- 3.6.6 Provide preliminary structural design building calculations. Submit structural design building calculations, assumptions, design loads, shear and bearing wall design, floor and roof framing members and other pertinent information to the DOTA PM for review and comment.

Drawings / Graphics / Illustrations Services

- 3.6.7 **Demolition Plans** – Provide scaled and dimensioned demolition plans with existing conditions and items to be removed per the proposed project structural scope of work. Include all pertinent building references as well as identify items to remain or be recycled.
- 3.6.8 **Foundation Plans** - Provide scaled drawings of the building or structure foundation plan. Foundation plans shall include grid locations, columns and walls, foundation sizes, concrete slabs-on-grade, concrete underlayment, location of slab depressions or level changes and reference floor elevations. Indicate areas that require permanent or temporary shoring.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

- 3.6.9 **Floor Framing Plans** - Provide scaled drawings of the building or structural floor framing plans. Floor framing plans shall include building reference gridlines, columns and walls, shear wall locations, materials composition, structural member sizes, reference floor elevations and other pertinent information.
- 3.6.10 **Roof Framing Plans** - Provide scaled drawings of the building or structural roof framing plans. Roof framing plans shall include building reference gridlines, materials composition, structural member sizes, reference elevations and other pertinent information.
- 3.6.11 **Building Sections** - Provide scaled drawings of the building sections. Building sections should show typical building composition as well as special areas and / or conditions. Building section drawings shall include reference gridlines, materials composition, structural members, reference elevations and other pertinent information.
- 3.6.12 **Enlarged or detail floor plans** – Provide detailed or enlarged floor plans for areas requiring additional information for clarity. Provide detailed or enlarged plans for technical areas, or areas requiring higher level of detail.
- 3.6.13 **Detail Drawings** - Provide scaled drawings for conditions that require additional information and detail.

Cost Estimating Services

- 3.6.14 Provide updated construction cost estimate. Provide a cost estimate comparison between anticipated costs and approved project budget.

Construction Specifications Services

- 3.6.15 Provide draft specifications for the project (CSI format).

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

3.7 Mechanical Systems

Planning / Coordination Services

- 3.7.1 Provide for meetings and discussion with the DOTA PM to determine parameters and standards for the selection of preferred mechanical equipment (manufacturers and systems). Prepare equipment list with sizing for proposed equipment. Document findings and recommendations for equipment with related cost analysis and submit to the DOTA PM for review and comment.
- 3.7.2 Provide for meetings and discussion with the DOTA PM to determine parameters and standards for the level of redundancy required for all mechanical system equipment. Provide recommendations for type of HVAC systems and equipment to be used. Provide recommendations for type of air conditioning system to be used in personnel spaces (variable air volume system, zoned constant air volume system). Prepare equipment list and capacities. Document all findings and recommendations for equipment with related cost analysis and submit to the DOTA PM for review and comment.
- 3.7.3 Provide for meetings and discussion with the DOTA PM to size for the largest mechanical equipment (in physical size) for the Schematic Design layout. Identify and indicate restrictions to design or selection of suppliers due to selected equipment physical size. Document findings and recommendations for equipment with related cost analysis and submit to the DOTA PM for review and comment.
- 3.7.4 Provide for meetings and discussion with DOTA PM to identify energy sources for HVAC systems and storage requirements. Provide recommendations for type of heating system to be used, where applicable (hot water boiler, hot air furnace, space heaters). Document findings, recommendations and related cost analysis and submit to the DOTA PM for review and comment.
- 3.7.5 Provide for meetings and discussion with the DOTA Fire Marshal to determine requirements for sprinklers and fire protection water supply. Include coordination with the DOTA PM and Fire Department to verify water availability to the project (ie: quantity, pressure).
- 3.7.6 Provide written narrative describing plumbing systems proposed, including source of exterior services. Document findings and recommendations, related cost analysis and submit to the DOTA PM for review and comment.
- 3.7.7 Provide water requirements and sanitary sewer flows calculation for project. Document findings and recommendations, related cost analysis and submit to the DOTA PM for review and comment.

Documents / Forms / Studies Services

- 3.7.8 Prepare mechanical system diagram and written description of the control philosophy for each process. Document findings and recommendations for mechanical systems with related cost analysis and submit to the DOTA PM for review and comment.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

- 3.7.9 Provide a mechanical equipment analysis study for existing buildings or facilities that require upgrade or modifications. Include existing conditions and identify sub-standard elements. Provide recommendations where existing systems or equipment are adequate to remain as well as areas where retrofit or modifications are required. Identify and assign capacity and sizing to existing equipment and systems. The study shall also provide a cost/feasibility analysis to identify and verify recommended implementation procedures and the associated cost.
- 3.7.10 Prepare and submit request application for connection of proposed systems to the DOTA PM. Verify and establish with the DOTA PM for designated point of connection.
- 3.7.11 Provide mechanical cooling and ventilation requirements study. Provide recommendation for type of ventilation system to be utilized (active or passive). Provide side-by-side comparison or proposed ventilation / cooling systems with list of advantages and disadvantages. Identify limitations or restrictions for each design. Include narrative description of the proposed systems including a schematic diagram of air-flow through the various system components. The study shall also provide a cost/feasibility analysis to identify associated cost. Document findings, recommendations and related cost analysis and submit to the DOTA PM for review and comment.
- 3.7.12 Provide a mechanical ventilation code analysis study for existing buildings or facilities that require upgrade or modifications. Include existing conditions and identify sub-standard elements. Provide recommendations where existing systems or equipment are adequate to remain as well as areas where retrofit or modifications are required. The study shall also provide a cost / feasibility analysis to identify and verify recommended implementation procedures and the associated cost.
- 3.7.13 Prepare preliminary ASHRAE HVAC load calculations and HVAC system control narrative. Document findings and submit to the DOTA PM for review and comment.
- 3.7.14 Provide central chilled water and refrigeration study. Provide data to include sizes, capacity, materials and installation methods. Provide peak demand tonnage of the building required to tie into the central chilled water plant. Provide calculations to verify required demand capacity will be met. Provide recommendations where existing system is inadequate to meet design loads. Provide a cost / feasibility analysis for recommended implementation procedures. Document findings, recommendations and related cost analysis and submit to the DOTA PM for review and comment.

Drawings / Graphics / Illustrations Services

- 3.7.15 **Demolition Plans** – Provide scaled and dimensioned demolition plans with existing conditions and items to be removed per the proposed project mechanical scope of work. Include all pertinent building references as well as identify items to remain or be recycled.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

- 3.7.16 **Site Plans** – Provide overall scaled and dimensioned site plan showing all existing buildings, facilities, roadways, designate building zones, work phasing and other items relevant to the proposed project area and mechanical scope of work.
- 3.7.17 **Mechanical Floor Plans** - Provide overall scaled and dimensioned floor plans indicating room names and numbers, location of janitorial, utility and service closets, plumbing walls and access locations, locate mechanical rooms and size, locate vertical chases, plumbing fixtures, supply and waste water piping one-line diagrams, cleanouts, floor sinks, floor drains, condensate drain locations, downspouts and other items relevant to the proposed project area.
- 3.7.18 **Mechanical Reflected Ceiling Plans** - Provide overall scaled and dimensioned reflected ceiling plans indicating room names and numbers, location of all air handling and refrigeration equipment, duct locations, routes and sizes, air diffuser locations, mechanical equipment locations and sizes, vertical exhaust ducts, temperature control locations, system connection locations.
- 3.7.19 **Mechanical Roof Plans** - Provide overall scaled and dimensioned roof plans. Locate roof equipment, vents, ducks, roof jacks, roof penetrations, gutters and downspouts, roof drains and other items relevant to the proposed project area.
- 3.7.20 **Enlarged or detail floor plans** – Provide detailed or enlarged floor plans for areas requiring additional information for clarity. Provide detailed or enlarged plans for technical areas or areas requiring higher level of detail.
- 3.7.21 **Mechanical Fire Sprinkler Plans** - Provide overall scaled and dimensioned plans indicating fire sprinkler head locations, piping, connection point and other items relevant to the proposed project area.
- 3.7.22 **Mechanical Equipment Schedules** – Provide mechanical equipment schedule list of equipment. Provide model numbers, sizes, weight and power requirements. Include all pumps, motors, exhaust fans, fan coil units, condenser units, holding tanks, heaters and other proposed mechanical equipment for the project.
- 3.7.23 **Mechanical Sanitary Piping Diagrams** – Provide sanitary piping diagrams for the proposed project area.
- 3.7.24 **Mechanical Water Piping Diagrams** – Provide water piping diagrams for the proposed project area.
- 3.7.25 **Standpipe Schematic Diagrams** – Provide standpipe schematic diagrams for the proposed project area.
- 3.7.26 **Detail Drawings** - Provide scaled drawings for conditions that require additional information and detail.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

Cost Estimating Services

3.7.27 Provide updated construction cost estimate. Provide cost estimate comparison between anticipated costs and approved project budget.

Construction Specifications Services

3.7.28 Provide draft specifications for the project (CSI format).

3.7.29 Provide list of all plumbing fixtures with catalog cut sheets.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

3.8 Electrical Systems

Planning / Coordination Services

- 3.8.1 Provide for meetings and discussion with the DOTA PM to determine whether electrical rooms should be air-conditioned. Document findings, recommendations and related cost analysis and submit to the DOTA PM for review and comment.
- 3.8.2 Provide for meetings and discussion with the DOTA PM to outline and further develop the proposed electrical distribution systems including schematic diagrams and narrative descriptions. These systems should incorporate the previous discussions and / or findings in the previous phases. Document findings, recommendations and related cost analysis and submit to the DOTA PM for review and comment.
- 3.8.3 Provide for meetings and discussion with the DOTA PM to determine parameters and standards for the level of redundancy required for power supplies and power distribution. Determine need for on-site standby and / or emergency power. Provide recommendations for power supplies and power distribution to be used. Establish preferred voltages for power distribution and utilization equipment. Document findings, recommendations and related cost analysis and submit to the DOTA PM for review and comment.
- 3.8.4 Provide for meetings and discussion with the DOTA PM to determine parameters and standards for control system components. Document findings, recommendations and related cost analysis and submit to the DOTA PM for review and comment.
- 3.8.5 Provide for meetings and discussion with the DOTA PM to determine parameters and standards to establish required lighting levels to be used for the design of the lighting system. Include a sample lighting calculation for a typical room or area. Incorporate preliminary lighting layout indicating general types of illumination. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.
- 3.8.6 Provide for meetings and discussion with the DOTA PM to ensure that the electrical systems planned for the facility is fully coordinated and compatible with the electrical requirements and the low voltage communications systems both new and existing. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.
- 3.8.7 Provide for meetings and discussion with the DOTA PM to determine parameters, standards and number of motor control centers (MCCs). Establish locations and proposed equipment to be powered out of each MCC. Determine equipment requiring uninterruptible power supplies (UPS) and locations of UPS equipment. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

- 3.8.8 Provide for meetings and discussion with the DOTA PM to coordinate to determine and coordinate space requirements and locations for control equipment. Confirm electrical equipment dimensions and layout with vendors if required. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.

Documents / Forms / Studies Services

- 3.8.9 Provide study for location of electrical equipment and weather protection (indoors vs. outdoors). Address issues regarding hazardous and/or corrosive locations. Provide recommendations for proposed location. Provide side-by-side comparison with list of advantages and disadvantages. Identify limitations or restrictions for each. The study shall also provide a cost/feasibility analysis to identify associated cost. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.
- 3.8.10 Provide for meetings and discussion with the DOTA PM to determine need for Application for Connection. If application is required, complete required forms, provide support documentation and submit to the DOTA PM for review and comment.
- 3.8.11 Provide electrical code analysis for existing buildings or facilities that require upgrade or modifications. Include existing conditions and identify sub-standard elements. Provide recommendations where existing systems or equipment are adequate to remain as well as areas where retrofit or modifications are required. Include cost / feasibility analysis to identify and verify recommended implementation procedures and the associated cost. Document findings, recommendations and related cost analysis and submit to the DOTA PM for review and comment.
- 3.8.12 Provide electrical power requirements study to determine number of required electrical feeds to the facility. Provide recommendations to determine locations of power feeds, voltage, billing details (peak usage rates), requirements for reduced voltage starters, substation requirements. Include cost / feasibility analysis to identify and verify recommended implementation procedures and the associated cost. Document findings, recommendations and related cost analysis and submit to the DOTA PM for review and comment.
- 3.8.13 Provide study for the existing type and adequacy of telephone, signal, fire alarm and other communication systems, including the number of spare telephone conductors available and spare capacity on fire alarm circuits. Identify systems that require upgrade or modifications. Include existing conditions and identify sub-standard elements. Provide recommendations where existing systems or equipment are adequate to remain as well as areas where retrofit or modifications are required. The study shall also provide a cost / feasibility analysis to identify and verify recommended implementation procedures and the associated cost. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.
- 3.8.14 Prepare preliminary electric and power load calculations and proposed systems. Address the adequacy of the primary electrical supply to the site. If the primary

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

source is inadequate, state measures proposed to correct the deficiency. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.

Drawings / Graphics / Illustrations Services

- 3.8.15 **Demolition Plans** – Provide scaled and dimensioned demolition plans with existing conditions and items to be removed per the proposed project. Include all pertinent building references as well as identify items to remain or be recycled.
- 3.8.16 **Site Plans** – Provide overall scaled and dimensioned site plan showing all existing buildings, facilities, roadways, designate building zones, work phasing, access control systems, exterior light fixture locations and types, transformer and emergency generator (if required) locations, primary and secondary power feed locations, telephone and other communication feed location and other items relevant to the proposed project area and electrical scope of work.
- 3.8.17 **Electrical Power Floor Plans** - Provide overall scaled and dimensioned floor plans indicating room names and numbers, reference gridlines, location and sizes of electrical rooms, call stations, identify electrical devices, electrical panels, outlets and other items relevant to the proposed project area.
- 3.8.18 **Electrical Lighting Plans** - Provide overall scaled and dimensioned lighting plans indicating room names and numbers, reference gridlines, electrical rooms, electrical lighting, switch and switch locations, one-line diagrams and other items relevant to the proposed project area.
- 3.8.19 **Enlarged or detail floor plans** – Provide detailed or enlarged floor plans for areas requiring additional information for clarity. Provide detailed or enlarged plans for technical areas, or areas requiring higher level of detail.
- 3.8.20 **Electrical One-line Diagrams** – Provide electrical one-line diagrams for the proposed project area.
- 3.8.21 **Other Diagrams** – Provide electrical one-line diagrams for telecommunications, adaptive communication systems (ACS), closed circuit television (CCTV) and American radio association (ARA) systems for the proposed project area.
- 3.8.22 **Panel Schedules** – Provide electrical panel schedules for the proposed project area.
- 3.8.23 **Luminaire Schedules** – Provide luminaire schedules for the proposed project area. Include luminaire type, designations, descriptions, lamps required, manufacturer and location.
- 3.8.24 **Detail Drawings** - Provide scaled drawings for conditions that require additional information and detail.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

Cost Estimating Services

3.8.25 Provide updated construction cost estimate. Provide a cost estimate comparison between anticipated costs and approved project budget.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

Construction Specifications Services

- 3.8.26 Provide draft specifications for the project (CSI format).
- 3.8.27 Provide list of all light fixtures and electrical devices with catalog cut sheets.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

3.9 Instrumentation and Control Systems (I/C Systems)

Planning / Coordination Services

- 3.9.1 Provide for meetings and discussion with the DOTA PM to determine parameters and standards to develop overall control philosophy including local control, control system, level of automation and supervisory control. Provide recommendations for control systems to be used. Include selection of control system configuration (local control panels, process level control (PLC) systems). Document findings, recommendations and related cost analysis and submit to the DOTA PM for review and comment.
- 3.9.2 Provide for meetings and discussion with the DOTA PM to determine parameters and standards to develop equipment / instrument tag numbering, naming, and abbreviation conventions. Provide recommendations for systems to be used. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.

Documents / Forms / Studies Services

- 3.9.3 Provide study to determine operational description of each major process for the project. Provide for meetings and discussion with the DOTA PM to formulate recommendations. The study shall also provide a cost / feasibility analysis to identify and verify recommended implementation procedures and the associated cost. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.

Drawings / Graphics / Illustrations Services

- 3.9.4 **Process Flow Diagrams** – Provide process flow diagrams for each critical system. Systems to include, process configurations, flow streams, valve and gate locations (manual and powered), chemical additions points, flow meters and other process control devices, other pertinent or supporting documents.
- 3.9.5 **Process Flow Drawings** – Provide floor plans drawings indicating process equipment locations and types. Provide locations and notations for all packaged control panels and adjustable-speed drives.
- 3.9.6 **Detail Drawings** - Provide scaled drawings for conditions that require additional information and detail.

Cost Estimating Services

- 3.9.7 Provide updated construction cost estimate. Provide a cost estimate comparison between anticipated costs and approved project budget.

Construction Specifications Services

- 3.9.8 Provide draft specifications for the project (CSI format).

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

Landscaping Systems

Planning / Coordination Services

- 3.9.9 Provide for meetings and discussion with the DOTA PM to determine specific landscaping design parameters and requirements for the project. Provide for meetings and discussion with appropriate parties to coordinate landscaping planting and irrigation with current ongoing projects. Establish overall landscaping boundaries and scope of work. Provide recommendations for landscaping and irrigation systems to be used. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.

Documents / Forms / Studies Services

- 3.9.10 Provide site study for existing landscaping and irrigation conditions. Identify existing conditions that require modifications and identify sub-standard elements that require corrections. Provide recommendations where modifications are required. Identify areas that are adequate to remain with estimated life-cycle. Include cost / feasibility analysis to identify and verify recommended implementation procedures and the associated cost. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.
- 3.9.11 Provide site study to inspect and document existing conditions. Identify constraints or landscaping design opportunities. Record and describe significant opportunities and constraints to landscape. Provide recommendations and solutions for area constraints. Develop design theme for landscaping layout and planting per the DOTA Landscape Design Guidelines. Include cost / feasibility analysis to identify and verify recommended implementation procedures and the associated cost. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.
- 3.9.12 Provide a study to inspect, identify and address accessibility, Americans with Disabilities Act (ADA), issues for the existing or proposed hardscape design. Provide recommendations and solutions. Include cost / feasibility analysis impacts (if any) to identify and verify recommended implementation procedures and their associated cost. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.

Drawings / Graphics / Illustrations Services

- 3.9.13 **Demolition Plans** – Provide scaled and dimensioned demolition (clearing and grubbing) plans with existing conditions and items to be removed per the proposed project. Include all pertinent building references as well as identify items to remain, be relocated or be recycled.
- 3.9.14 **Site Plans** – Provide overall scaled and dimensioned site plan showing all existing buildings, facilities, roadways, designate building zones, work phasing and other items relevant to the proposed project area and landscape scope of

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

work. Coordinate and address issues pertaining to the following: erosion control, sensitive areas, codes / guidelines, contaminated soil, landscape buffering, non-motorized / vehicular circulation, roadway plans, interdisciplinary conflicts, and others as appropriate.

- 3.9.15 **Plants and Materials List** – Provide a plant and material lists and schedules.
- 3.9.16 **Irrigation Plans** – Provide a coordinated irrigation design drawings, schedules, references and legends.
- 3.9.17 **Enlarged or detail floor plans** – Provide detailed or enlarged floor plans for areas requiring additional information for clarity. Provide detailed or enlarged plans for technical areas, or areas requiring higher level of detail.
- 3.9.18 **Detail Drawings** - Provide scaled drawings for conditions that require additional information and detail.

Cost Estimating Services

- 3.9.19 Provide updated construction cost estimate. Include preliminary plant material list and associated cost breakdowns. Provide a cost estimate comparison between anticipated costs and approved project budget.

Construction Specifications Services

- 3.9.20 Provide draft specifications for the project (CSI format).

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

3.10 Fire Protection Systems

Planning / Coordination Services

- 3.10.1 Provide for meetings and discussion with the DOTA PM and the appropriate parties to determine fire vehicle access requirements, parameters for the project and fire vehicle access for current ongoing projects. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.

Documents / Forms / Studies Services

- 3.10.2 Provide study to identify fire protection systems for the project, including the source of exterior fire protection services and water mains. Provide recommendations and solutions for area constraints. Include cost / feasibility analysis to identify and verify recommended implementation procedures and the associated cost. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.

Drawings / Graphics / Illustrations Services

- 3.10.3 Fire Protection Systems drawings shall be coordinated by the Architect, Civil and Mechanical engineer. Include fire vehicle access, fire hydrants, dry or wet stand pipes, fire sprinkler systems, fire extinguishers, fire hose cabinets, fire detections systems, fire alarm systems and other related items.

Cost Estimating Services

- 3.10.4 Provide updated construction cost estimate. Include preliminary plant material list and associated cost breakdowns. Provide a cost estimate comparison between anticipated costs and approved project budget.

Construction Specifications Services

- 3.10.5 Provide draft specifications for the project (CSI format).

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

3.11 Special Systems - Communications

Planning / Coordination Services

- 3.11.1 Provide for meetings and discussion with the DOTA PM to determine communications requirements and parameters for the project. Provide for meetings and discussion with appropriate parties to coordinate communications requirements with current ongoing projects or existing systems in use. Provide recommendations, description and schematic of and proposed systems for project. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.
- 3.11.2 Provide for meetings and discussion with the DOTA PM to determine requirements for test equipment, repair shop and spare parts storage for communication systems. Provide recommendations, description and schematic for proposed systems. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.

Documents / Forms / Studies Services

- 3.11.3 Perform code check for communications requirements for the proposed project and related facilities. Verify existing conditions and identify areas that require upgrade or retrofit. Identify communication system compatibility and related issues for interface. If compatibility issues are evident, provide suggestions and recommendations to remedy potential conflicts. Coordinate code check assumptions with the local code officials to verify code findings and establish project parameters. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.
- 3.11.4 Provide narrative description of the proposed systems including a schematic diagram of the communication system. Identify, record and describe significant opportunities and constraints. Provide recommendations and solutions for area constraints. Include cost / feasibility analysis to identify and verify recommended implementation procedures and the associated cost. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.

Drawings / Graphics / Illustrations Services

- 3.11.5 Communication systems drawings shall be coordinated by the Architect, Electrical engineer. Items to include communication rooms, equipment schedules, schematic layouts and interface, equipment manuals, operating procedures, and other related items.

Cost Estimating Services

- 3.11.6 Provide updated construction cost estimate. Itemize proposed equipment costs. Provide a cost estimate comparison between anticipated costs and approved project budget.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

Construction Specifications Services

3.11.7 Provide draft specifications for the project (CSI format).

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

3.12 Special Systems – Security

Planning / Coordination Services

3.12.1 Provide for meetings and discussion with the DOTA PM to determine security system requirements and parameters for the project. Provide for meetings and discussion with appropriate parties to coordinate security requirements with current ongoing projects or existing systems in use. Provide recommendations, description and schematic of and proposed systems for project. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.

Documents / Forms / Studies Services

3.12.2 Provide a narrative description of the proposed security systems including a schematic diagram and integration with the existing. Identify, record and describe significant opportunities and constraints. Provide recommendations and solutions for anticipated constraints or conflicts. Include cost / feasibility analysis to identify and verify recommended implementation procedures and their associated cost. Document all findings and recommendations with related cost analysis and submit to the DOTA PM for review and comment.

Drawings / Graphics / Illustrations Services

3.12.3 Security systems drawings shall be coordinated by the Architect, Electrical engineer. Items to include: security rooms, site security, designated secured areas, controlled areas, closed circuit television (CCTV) systems, equipment rooms, storage areas, detainment facilities, equipment schedules, schematic layouts and interface, and other related items.

Cost Estimating Services

3.12.4 Provide updated construction cost estimate. Provide a cost estimate comparison between anticipated costs and approved project budget.

Construction Specifications Services

3.12.5 Provide draft of specifications for the project (CSI format).

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

4. Design Development Requirements

- 4.1 General
- 4.2 Architectural Systems
- 4.3 Civil and Environmental Systems
- 4.4 Structural Systems
- 4.5 Mechanical Systems
- 4.6 Electrical Systems
- 4.7 Instrumentation and Control Systems
- 4.8 Landscaping Systems
- 4.9 Fire Protection
- 4.10 Special Systems - Communication
- 4.11 Special Systems - Security

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

4. Design Development Requirements

4.1 General

- 4.1.1 The **Design Effort** shall constitute the following phases: (1) Conceptual Design, (2) Schematic Design, (3) Design Development, (4) Construction Documents. **Successful completion of the Design Development Phase shall constitute 60% completion of the Design Effort.**
- 4.1.2 The **Design Development Phase** shall follow the successful completion of the Schematic Design Phase. The **Design Development Phase** shall further develop and refine the design and its related documents. In this phase of work, scheduling requirements and all major design and equipment decisions will be finalized. The construction cost estimate and associated schedules shall be updated. The design shall be further developed to include selection of colors, materials and finishes. All design review comments from the previous phase shall be addressed and incorporated.
- 4.1.3 The **Design Development Phase** drawings and documents shall be submitted to the DOTA for review and approval. The DOR shall revise and resubmit drawings and documents as required by the DOTA until the DOTA issues written approval of the **Design Development Phase** documents.
- 4.1.4 The DOR shall be responsible for a formal presentation to the DOTA, stakeholders and project sponsors of the completed **Design Development Phase** documents. This presentation shall include sufficient detail to demonstrate that all the requirements of the project are identified, understood and addressed. This presentation shall also include a detailed description of the code requirements and accessibility criteria incorporated in the documents to insure applicable code compliance. Comments from this presentation shall be documented, addressed and incorporated in the Design Development documents.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

4.2 Architectural Systems

Planning / Coordination Services

- 4.2.1 Coordinate design, drawings and specifications. All documents shall be complete and coordinated with the other design disciplines (ie: coordinate mechanical items such as, selection of HVAC equipment, size and location, equipment rooms, including space requirements, routing of ductwork, design R-values for all exterior walls, glazing and roof). Incorporate all approved comments, studies and directives from the previous design phase.
- 4.2.2 Provide description of the materials used for all major components of construction. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.
- 4.2.3 Provide study and support documentation to establish locations for service entrances, construction mobilization, and trash / disposal locations. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.
- 4.2.4 Provide study and support documentation to establish locations for construction recyclable materials sorting and storage. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.

Documents / Forms / Studies Services

- 4.2.5 Provide complete analysis of all applicable codes for all buildings and structures with local code officials including fire marshal. Document findings and submit to the DOTA PM for their review and comment. Schedule meeting with the DOTA PM to resolve special code issues not previously identified.
- 4.2.6 Provide list of rooms and / or spaces with the associated floor area (square footage) and project total. Identify rooms or spaces where floor area calculations differ from the requirements established for the project. Provide recommendations for adjustments or justification for the floor area differences. Document findings and submit to the DOTA PM for their review and comment.

Drawings / Graphics / Illustrations Services

- 4.2.7 **Title Sheets** – Provide project title, project reference numbers, sheet index and numbers, project location, state map, project team and contact information, signature blocks and other pertinent or general information for the project.
- 4.2.8 **General Notes** – Provide project general notes and conditions of the construction documents.
- 4.2.9 **Site Plans** – Provide overall scaled and dimensioned site plan shall showing all existing buildings, facilities, contours, roadways, utilities, and other items relevant to the proposed project area. Indicate layout of the proposed roadways, access

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

drives, parking areas, site utilities and proposed building locations.

- 4.2.10 **Demolition Plans** – Provide scaled and dimensioned demolition plans with existing conditions and items to be removed per the proposed project. Include all pertinent building references as well as identify items to remain or recycled.
- 4.2.11 **Egress and Fire Extinguisher Layout Floor Plans** - Prepare summary of code related design parameters on the drawings. This summary shall address existing exit path travel distances, fire sprinkler requirements, fire protection ratings, fire extinguisher locations, exit width requirements, building type of construction, occupancy classification or separations and other pertinent life and safety assumptions.
- 4.2.12 **Floor Plans** - Provide scaled and dimensioned floor plans. Floor plan information shall include materials designation, graphics legend, walls, columns, partitions, expansion joints, structural grids, room names and numbers, equipment, clear floor spaces, required accessible paths of travel, required exit paths and other pertinent information. Building references and Building key drawings shall be included along with drawings section “cut” indications and areas to be detailed should also be referenced and coordinated. Provide door, window and louver reference marks on plans to coordinate with respective schedules and details.
- 4.2.13 **Reflected Ceiling Plans** - Provide scaled and dimensioned reflected ceiling plans. Reflected ceiling plans shall include materials designation, graphics legend, walls, columns, ceiling heights, lighting concepts, expansion joints, structural grids, room names and numbers, equipment and other pertinent information. Provide reference points of all suspended acoustic ceiling patterns. Indicate special ceiling patterns including all relevant dimensions and details.
- 4.2.14 **Furniture and Equipment Floor Plans** - Provide scaled and dimensioned furniture and equipment floor plans. Indicate movable and built in furniture, equipment and fixed equipment / accessories. Identify required clear floor spaces required around equipment. Verify access, minimum dimensions and clearances for furniture and equipment to be moved into its room or space.
- 4.2.15 **Roof Plans** - Provide scaled and dimensioned roof plans. Roof plans shall include materials designation, graphics legend, equipment, roof drains, overflow drains, gutters, expansion joints, roof scuppers, roof scuttle locations, parapets, flashing areas to be detailed, roof slopes, skylights, vents, roof jacks, equipment curbs, equipment screening, structural grids and other pertinent information. Indicate UL rating numbers for rated roof systems where applicable. Provide locations and designs for equipment screens. Provide dimensions to locate all equipment and items.
- 4.2.16 **Exterior Elevations** - Provide scaled and dimensioned building or structure exterior elevations. Exterior elevations shall include materials designation, graphics legend, windows and louvers, landscaping, assumed floor plane with reference elevations, expansion joints, structural grids and architectural design features. Provide locations and dimensions for wall mounted items, equipment, louvers, devices, etc. Provide locations and details for all expansion joints.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

Provide locations and dimension for all reveals and / or architectural features.

- 4.2.17 **Building Sections** - Provide scaled and dimensioned building sections. Building sections shall include materials designation, graphics legend, assumed floor planes and reference elevations, expansion joints, structural grids, waterproofing, mechanical and electrical systems roughed-in, equipment, areas to be detailed and architectural design features.
- 4.2.18 **Enlarged or detail floor plans** – Provide detailed or enlarged floor plans for areas requiring additional information for clarity. Provide detailed or enlarged plans for bathrooms, stair and stairwells, technical areas, or areas requiring higher level of detail.
- 4.2.19 **Detail Stair Plans, Sections and Elevations** - Provide scaled and dimensioned drawings for all stairways, including guardrail and handrail information / details for the project area. Provide dimensioned stair width and length. Provide tread size, nosing and riser heights.
- 4.2.20 **Detail Elevator Plans, Sections and Elevations** - Provide scaled and dimensioned drawings for all elevators, including cab, pit, hoistways, penthouse, shafts, machine rooms or closets, sump pits and other pertinent information / details for the project area.
- 4.2.21 **Signage plans** – Provide floor plans with signage locations. Provide signage types, mounting and details.
- 4.2.22 **Interior elevations** – Provide scaled and dimensioned interior elevation drawings with room materials, built-ins, equipment, fire alarm pull stations and extinguishers, architectural features and room heights indicated. Indicate areas to be detailed and provide details as required. Indicate all items mounted on wall with dimensions. Indicate casework either by module cabinet number or by dimensions and details.
- 4.2.23 **Room Finish Schedule** – Provide room and finish materials schedule. Coordinate materials designation with location on plans, elevations and / or sections. Complete schedules to identify finishes that require building code special requirements or performance (ie: flame spread ratings, etc.)
- 4.2.24 **Door and Window Schedules and Types** - Provide door, window and louver schedules. Schedules should indicate coordination with floor plans for location, types, sizes and references to conditions to be detailed. Provide coordination with respective specifications sections. The door hardware types shall be coordinated with the DOTA and master door / key systems. Confirm hardware and keying requirements with the DOTA PM. Provide head / jamb / sill reference symbols. Provide required fire-ratings.
- 4.2.25 **Wall Types and Sections** – Provide wall types and details. Complete wall sections and details necessary to achieve code required fire ratings. Indicate reference standards for all rated assemblies.
- 4.2.26 **Detail Drawings** - Provide scaled detail drawings for conditions that require

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
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additional information and detail. Provide details per the DOTA standards for all expansions joints.

- 4.2.27 Incorporate design standards and calculations as required by the HNL SC in accordance with the HNL SHPG and / or LEED equivalency compliance where applicable.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
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Cost Estimating Services

4.2.28 Update cost / benefit analysis with the necessary supporting information, including technical data and cost comparison for the systems, structures, equipment and / or materials selected for the project. Prepare and submit a construction cost estimate update for each building system and its related discipline.

Construction Specifications Services

4.2.29 Provide specifications for the project (CSI format).

4.2.30 Provide copy of the following sections per the DOTA standards:

- Notice to Bidders
- Instructions for Contractor's Licensing
- Special Provisions
- Supplemental Special Conditions
- Airports Division Supplement to Special Provisions
- Notice of Requirement for Affirmative Action to Ensure Employment Opportunity (if required)
- General Information Regarding Disadvantage Business Enterprises (if required)
- Regulatory Requirements for Federal-Aid Projects Regarding Disadvantage Business Enterprises (if required)
- Required Federal-Aid Contract Provisions (if required)

Construction Schedule Services

4.2.31 Provide estimated construction schedule. Provide comparison with the DOTA estimates.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

4.3 Civil and Environmental Systems

Planning / Coordination Services

- 4.3.1 Identify, finalize and incorporate all existing and proposed utility services to include all runs, locations, capacities, sources characteristics, materials and installation methods. The DOR shall review the utilities master plan with the DOTA PM and verify planned utilities for the project. Incorporate information into the Design Development drawings.
- 4.3.2 Identify haul routes, logistics support for construction, mobilization and materials. Document assumptions and submit to the DOTA PM for review and comment.
- 4.3.3 Identify, finalize and incorporate latest survey data for site plan base drawing into the Design Development drawings.
- 4.3.4 Identify, finalize and incorporate finished grade elevation information, cut / fill, and additional fill requirements into the Design Development drawings.
- 4.3.5 Identify, finalize and incorporate storm water control concepts (swales, curb, and gutter) into the Design Development drawings.
- 4.3.6 Coordinate accessibility (ADA) requirements and local site plan regulations into the Design Development drawings.
- 4.3.7 Provide designated areas or methods for refuse / garbage / recycling holding areas during construction and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.

Documents / Forms / Studies Services

- 4.3.8 Provide storm and wastewater calculations. Submit calculations to local site permitting authorities. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.
- 4.3.9 Provide study to complete plans for environmental mitigation. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.
- 4.3.10 Provide study to determine security access control system requirements for site gates, and secured or controlled areas. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.
- 4.3.11 Identify all permanent roads, walks, paths, and parking lots, including a statement of the general soil conditions with a brief outline of the soil exploration and testing performed as related to the development of roads, and related vehicular / pedestrian surface areas. Identify the type and volume of traffic, controlling wheel loads, classes of surfacing under consideration and

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

justifications. Notate any deviation from previously established criteria. Include design vehicle axle loads and frequency. Finalize traffic flow, parking, and lay out road access to all buildings and structures. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.

- 4.3.12 Provide and develop plan for contaminated soil disposal or removal. Document and submit to the DOTA PM for review and comment.
- 4.3.13 Provide study to outline of potential operational constraints or issues relating to the parking design for the DOTA PM. Include pavement and striping site plans. Provide recommendations for areas that require correction or adjustments. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.

Drawings / Graphics / Illustrations Services

- 4.3.14 **General Notes** – Provide project general notes and conditions of the construction documents.
- 4.3.15 **Topographical Survey Plan** – Provide scaled and dimensioned site topographical plan survey of the project area and adjacent areas pertinent to the project.
- 4.3.16 **Site Demolition Plan** – Provide a scaled and dimensioned site plans with existing conditions and items to be removed per the proposed project civil engineering scope of work. Provide demolition requirements and limits.
- 4.3.17 **Site Plan** – Provide a scaled and dimensioned site plans with building footprints (establish finished floor levels), site topographical information coordinated, reference spot elevations, area designations, site boundaries, setbacks, building footprint reference elevations, aircraft access indicating aircraft parking positions, driveways, roadways and other pertinent site information. Establish finished grades, overall major surfaces, roads, walkways, paths and other proposed hard surfaces. Develop temporary and final fencing plans including required barriers. Indicate location of streams, wetlands, and their buffers, floodplains, hazardous waste / contaminated soil areas, and other environmentally sensitive areas as they pertain to the project area. Identify all site permanent features to be constructed on the site. Identify aircraft aprons, taxiways, taxilanes, design aircraft and design solution showing aircraft traffic projection and pavement thickness design.
- 4.3.18 **Site Grading Plan** - Provide site grading plan including the following: easements, site improvements, reference elevations, existing or new grade contour lines, locations of storm and drainage lines and catch basins with invert elevations, storm water detention / retention facilities or systems. Coordinate drawings and information with the geotechnical engineer. Prepare grading and drainage site plan indicating cross sections and profiles, spot elevations, and detail symbols of all conditions to be detailed.
- 4.3.19 **Site Best Management Practices (BMP) Drainage Plan** - Provide grading and

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

drainage site plan including the following: easements, construction barricades, filter socks, access roads, reference elevations, existing or new grade contour lines, locations of existing and proposed storm and drainage inlets and lines and catch basins with invert elevations, storm water detention / retention facilities or systems. Locate new and / or existing storm water and IWS management facilities (if applicable) on the plans. Complete erosion control site plan and detail symbols of all conditions to be detailed.

- 4.3.20 **Site Utility Plans** - Provide utilities site plan including the following: easements, locations of all site improvements, locations of all above and below ground utilities including power, exterior lighting, domestic water, fire mains, hydrants, sanitary sewer, storm water drainage, natural gas, fuel lines, steam lines, communications, NAVAIDS and locations of all valves, meters, vaults, manhole covers, pull boxes, and other related items or structures. Develop layouts for proposed airfield electrical circuits, NAVAIDS, and underground utilities. Prepare utilities site plan indicating sizes of all utility lines, vaults, manhole covers, and pull boxes, invert elevations. Indicate detail symbols of all conditions to be detailed.
- 4.3.21 **Construction Traffic Flow Plans** - Provide scaled plan with proposed traffic flow during construction for access onto, off and around the project area. Provide contractor staging, storage, access, and off-site access corridors.
- 4.3.22 **Roadway Layout Plans** - Provide scaled plan with new and existing layout for roadways. Include structure, road, and major site element horizontal locations and information. Include truck access corridors and maneuvering requirements. Provide other related and pertinent information and graphics.
- 4.3.23 **Parking areas or structures** - Provide scaled and dimensioned parking area plans. Provide parking area and stall size and locate parking lots required. Provide parking counts and parking stall type composition. Prepare pavement analysis and striping site plan indicating the following: easements, locations of all driveways, parking areas with parking stalls (new and existing), sidewalks and curbs, parking spaces required by code and legend. Indicate detail symbols of conditions to be detailed, dimensioned parking layout, and detail symbols of all conditions to be detailed.
- 4.3.24 **Water and Sewer Profiles** – Provide scaled drawings to indicate piping profiles. Include reference elevations, station points and inverts etc.
- 4.3.25 **Drain Profiles** – Provide scaled drawings to indicate drain piping profiles. Include reference elevations, station points and inverts. Provide typical sections for each type of paving, including surface drainage. Include horizontal and vertical layouts for all proposed airfield paving, emergency roads, and drainage features. Provide layout for yard piping 18 inches and larger as well as for plan drain layout. Identify and locate corridors for smaller piping and other utilities. Prepare grading and drainage site plan indicating cross sections and profiles, spot elevations, and detail symbols of all conditions to be detailed.
- 4.3.26 **Detail Drawings** - Provide scaled drawings for conditions that require additional information and detail.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

Cost Estimating Services

4.3.27 Update cost / benefit analysis with the necessary supporting information, including technical data and cost comparison for the systems, structures, equipment and / or materials selected for the project.

Construction Specifications Services

4.3.28 Provide specifications for the project (CSI format).

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

4.4 Structural Systems

Planning / Coordination Services

- 4.4.1 Provide description of foundation conditions, types of foundations to be used, methods by which the allowable bearing value was determined, and maximum allowable bearing capacity for the foundation and other related items / assumptions used for the design of the foundation design. Coordinate structural design with soils and geotechnical findings. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.
- 4.4.2 Provide description of the structural building system selected and reasons for their selection. Include design values and calculations for load capacities, dimensions, materials or other design criteria. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.
- 4.4.3 Provide description of structural floor systems proposed with length and spacing of principal members. Provide data, calculations and other support materials and / or documents. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.
- 4.4.4 Provide description of the structural roof system proposed with principal members and dimensions. Provide data, calculations and other support materials and / or documents. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.
- 4.4.5 Provide narrative and calculations for load carrying capacities limits and live load design factors used for floor loads, wind and lateral loads, seismic considerations, and all other structural design criteria. Provide data, calculations and other support materials and / or documents. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.
- 4.4.6 Identify structural design features and verify constructability. If structural design features appears pose to constructability challenges over and beyond previous assumptions, these areas or items shall be documented and brought to the attention of the DOTA PM. Provide possible alternatives to address any issues, or state design rationale to proceed further with these design elements. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.
- 4.4.7 Provide for coordination for HVAC systems (ie: required penetrations) and equipment locations and anticipated loads (weight requirements). Provide structural design elements or systems as required for specified equipment design loads. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

Documents / Forms / Studies Services

- 4.4.8 Provide structural building calculations for design criteria to be used. Include structural design building calculations, assumptions, design loads, shear and bearing wall design, floor and roof framing members and other pertinent information. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.
- 4.4.9 Provide a structural design analysis to identify structural problems associated with connections to any existing facility. Provide recommendations to resolve structural design issues. Include cost / feasibility analysis associated with the recommended solution. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.

Drawings / Graphics / Illustrations Services

- 4.4.10 **General Notes** – Provide project general notes and conditions of the construction documents.
- 4.4.11 **Demolition Plans** – Provide scaled and dimensioned demolition plans with existing conditions and items to be removed per the proposed project structural scope of work. Include all pertinent building references as well as identify items to remain or recycled.
- 4.4.12 **Foundation Plans** - Provide scaled drawings of the building or structure foundation plans. Foundation plans shall include grid locations, columns and walls, foundation sizes, concrete slabs on grade, concrete underlayment, locate slab depressions or level changes, reference floor elevations. Identify areas that require permanent or temporary shoring. Locate and size grade beams. Include retaining walls or retaining conditions, coordinate waterproofing with other disciplines. Coordinate floor and foundation elevations.
- 4.4.13 **Floor Framing Plans** - Provide scaled drawings of the building or structural floor framing plans. Floor framing plans shall include building reference gridlines, columns and walls, shear wall locations, materials composition, structural member sizes, reference floor elevations and other pertinent information. Indicate spans and spacing of all structural members. Show framing members and column sizes. Provide for location and size of floor and wall openings coordinated with other disciplines.
- 4.4.14 **Roof Framing Plans** - Provide scaled drawings of the building or structural roof framing plans. Roof framing plans shall include building reference gridlines, materials composition, structural member sizes, reference elevations and other pertinent information.
- 4.4.15 **Building Sections** - Provide scaled drawings of the building sections. Building sections should show typical building composition as well as special areas and / or conditions. Building section drawings shall include reference gridlines, materials composition, structural members, reference elevations and other pertinent information. Provide structural building sections, transverse and

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
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longitudinal. Indicate vertical relationships.

- 4.4.16 **Enlarged or detail floor plans** – Provide detailed or enlarged floor plans for areas requiring additional information for clarity. Provide detailed or enlarged plans for technical areas, or areas requiring higher level of detail.
- 4.4.17 **Structural Systems Drawings** - Provide scaled drawings as required to properly detail, describe and delineate structural systems used (ie: steel deck, steel framing and connections, truss design, pre-cast concrete details, site cast concrete reinforcing and details, post-tension concrete, CMU wall details, retaining walls or other retaining conditions, shear walls or braced frames, etc).
- 4.4.18 **Detail Drawings** - Provide scaled drawings for conditions that require additional information and detail.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
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Cost Estimating Services

4.4.19 Update cost / benefit analysis with the necessary supporting information, including technical data and materials selected for the project.

Construction Specifications Services

4.4.20 Provide specifications for the project (CSI format).

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
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4.5 Mechanical Systems

Planning / Coordination Services

- 4.5.1 Provide equipment schedules listing all anticipated equipment. Prepare final equipment selection (ie: type, size, weight, arrangement, location, physical size). Complete equipment data sheets and list of all major equipment items. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.
- 4.5.2 Select and size all major mechanical equipment including pumps. Prepare sizing calculations. Obtain vendor price quotes for all major mechanical equipment. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.
- 4.5.3 Provide description of proposed automated HVAC management system with system control philosophy. Include current and future capabilities. Include HVAC equipment to be used inside and outside the building. Provide information for air handling units, filters VAV boxes, terminal units, exhaust fans and any special HVAC systems. If central plant chilled water source is not used, provide justification and description of recommended solution. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.
- 4.5.4 Provide description of the proposed HVAC controls, including type (ie: pneumatic only, pneumatic with direct digital controls (DDC) panel) and design philosophy. Locate thermostat placement, special control features and total estimated HVAC control system cost. Identify humidistats with reason for use and recommended settings. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.
- 4.5.5 Provide list of areas or spaces to be air-conditioned. Provide a description of the proposed air conditioning systems considered and system selected. Locate major air handling equipment. Finalize size and location of mechanical equipment rooms. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.
- 4.5.6 Provide description of proposed ventilation systems. Establish design parameters for outside air requirements and calculate air rates in required areas. Provide basis for selection of air exchange rate (ie: ASHRAE, Hawaii State IAQ Code, Uniform Mechanical Code, etc.). Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.
- 4.5.7 Provide description of proposed fire sprinkler system, indicate the authority for the installation, the hazard rate of occupancy, the type of sprinkler system (wet or dry), and the water volume and pressure required. Provide additional information for any special system such as carbon dioxide, foam, etc. that will be required. Verify adequacy of water supply and indicate if installation of fire pump is

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
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required. If a fire pump is required, include pump flow rate, pressure and location. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.

- 4.5.8 Provide description of proposed refrigeration equipment, type and thickness of refrigeration insulation, and whether factory prefabricated cooler or cold storage box. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.
- 4.5.9 Coordinate duct sizes, locations and routing, HVAC systems and equipment to verify adequate clearances and code compliance (ie: fire dampers, fire stops, etc). Incorporate and coordinate information into the Design Development drawings.
- 4.5.10 Identify areas to be refrigerated indicating their usage and temperatures to be maintained. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.
- 4.5.11 Provide the number of plumbing fixture units with supporting data showing demand and gallons per minute (GPM) for all plumbing fixtures. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.
- 4.5.12 Provide the estimated water pressure required at each building, minimum and maximum design values. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.
- 4.5.13 Indicate the type of heater and capacity for hot water supply. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.

Documents / Forms / Studies Services

- 4.5.14 Provide final equipment sizing, line sizing and support calculations. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.
- 4.5.15 Provide calculation for the hydraulic profile for all major gravity system pipelines and hydraulic structures. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.
- 4.5.16 Provide cooling / heating load calculations for HVAC equipment sizing include energy code requirements and selected building construction materials. Prepare HVAC equipment schedules and data sheets. Complete HVAC checklist form. Prepare HVAC system block diagrams. Include design criteria and system loads. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.
- 4.5.17 Provide calculations for inside design temperatures, relative humidity, outside

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wet and dry bulb design temperatures, "U" factors for the type of construction proposed and a statement of the economics of applying insulation and / or sunshades. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.

- 4.5.18 Provide study or necessary support documentation to indicate certification necessary and provide verification necessary for fire alarm installers, suppliers, and manufacturers. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.
- 4.5.19 Provide report on design criteria and system loads. Submit copy of information and findings to the DOTA PM for review. Incorporate approved information into the Design Development drawings.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
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Drawings / Graphics / Illustrations Services

- 4.5.20 **General Notes** – Provide project general notes and conditions of the construction documents.
- 4.5.21 **Demolition Plans** – Provide scaled and dimensioned demolition plans with existing conditions and items to be removed per the proposed project mechanical scope of work. Include all pertinent building references as well as identify items to remain or be recycled.
- 4.5.22 **Site Plans** – Provide an overall scaled and dimensioned site plan showing all existing buildings, facilities, roadways, designate building zones, work phasing and other items relevant to the proposed project area and mechanical scope of work.
- 4.5.23 **Mechanical Floor Plans** - Provide overall scaled and dimensioned floor plans indicating room names and numbers, location of janitorial, utility and service closets, plumbing walls and access locations, locate mechanical rooms and size, locate vertical chases, plumbing fixtures, supply and waste water piping one-line diagrams, cleanouts, floor sinks, floor drains, condensate drain locations, downspouts and other items relevant to the proposed project area. Include all equipment and required and connecting ductwork drawn to scale for mechanical rooms. Indicate routing of major piping systems and ductwork for project. Indicate the breakdown of proposed zones.
- 4.5.24 **Mechanical Reflected Ceiling Plans** – Provide overall scaled and dimensioned reflected ceiling plans indicating room names and numbers, location of all air handling and refrigeration equipment, duct locations, routes and sizes, air diffuser locations, mechanical equipment locations and sizes, vertical exhaust ducts, temperature control locations and system connection locations. Include, duct sizes and materials, special fire rating requirements with UL numbers, mechanical equipment designations and sizes, vertical exhaust duct sizes and fire damper locations. Include ventilation design drawing for fan locations, type of equipment and airflows.
- 4.5.25 **Mechanical Roof Plans** - Provide overall scaled and dimensioned roof plans. Locate roof equipment, vents, ducts, roof jacks, roof penetrations, gutters and downspouts, roof drains and other items relevant to the proposed project area. Identify roof drains and route of storm drains to storm sewer.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

- 4.5.26 **Mechanical Sections** - Provide scaled and dimensioned sections of mechanical room showing equipment and ductwork. Include typical section of plenum space when used for ductwork. Show typical sections of space above for fume hoods, exhaust ducts, etc. Identify routing or right-of-way for major duct runs. Show building section showing riser and branch lines, fixtures and equipment.
- 4.5.27 **Enlarged or detail floor plans** – Provide detailed or enlarged floor plans for areas requiring additional information for clarity, such as technical areas, or areas requiring higher level of detail. Show all plumbing fixtures including those for accessibility (ADA) drawn to scale.
- 4.5.28 **Mechanical Fire Sprinkler Plans** - Provide overall scaled and dimensioned plans indicating fire sprinkler head locations, piping, connection point and other items relevant to the proposed project area. Indicate service hydrant, standpipe, test valve, and fire pump locations. Indicate risers and hose cabinets.
- 4.5.29 **Mechanical Equipment Schedules** – Provide mechanical equipment schedule list of equipment. Provide model numbers, sizes, weight and power requirements. Include all pumps, motors, exhaust fans, fan coil units, condenser units, holding tanks, heaters and other proposed mechanical equipment for the project. Show sump pump and sewage ejector locations.
- 4.5.30 **Mechanical Fixture Schedules** – Provide mechanical plumbing fixture schedule list of equipment. Provide model numbers, sizes, weight and other requirements.
- 4.5.31 **Mechanical Sanitary Piping Diagrams** – Provide sanitary piping diagrams for the proposed project area.
- 4.5.32 **Mechanical Water Piping Diagrams** – Provide water piping diagrams for the proposed project area.
- 4.5.33 **Standpipe Schematic Diagrams** – Provide standpipe schematic diagrams for the proposed project area.
- 4.5.34 **Detail Drawings** - Provide scaled drawings for conditions that require additional information and detail.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

Cost Estimating Services

4.5.35 Provide updated construction cost estimate. Provide a cost estimate comparison between anticipated costs and approved project budget.

Construction Specifications Services

4.5.36 Provide specifications for the project (CSI format).

4.5.37 Provide list of all plumbing fixtures with catalog cut sheets.

4.5.38 Provide list of all equipment with catalog cut sheets.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

4.6 Electrical Systems

Planning / Coordination Services

- 4.6.1 Provide narrative of the characteristics of the electrical supply to the site, including circuit interrupting requirements and voltage regulations. Provide an estimate of the total connected load and resulting kilowatt demand load by applying proper demand and diversity factors. Include anticipated power demands during construction and the associated costs. Identify limitations to the use of power from existing sources during construction. Indicate electrical service entrance characteristics and transformer requirements. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.
- 4.6.2 Determine the primary and / or secondary distribution voltage selected for the project. Provide narrative for basis of selection. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.
- 4.6.3 Determine the power load for building equipment such as heating and air conditioning. Select type of electrical systems and prepare equipment schedule and capacities. Determine lighting and convenience outlet loads. Determine the loads for special operating equipment (ie: compressors and pumps) and for power receptacle being provided to energize special equipment. Apply an appropriate demand factor to each to compute a total demand load. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.
- 4.6.4 Identify the recommended type, size, and location of conductors. Specify type of wiring (ie. rigid conduit, electrical metallic, tubing, non-metallic sheathed cable) and where proposed for use. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.
- 4.6.5 Identify requirements for the emergency electrical system and provide recommendations for implementation into the design. Identify potential compatibility issues and propose solutions. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.

Documents / Forms / Studies Services

- 4.6.6 Provide report to describe the pertinent design criteria standards for voltage drop, physical characteristics of overhead or underground circuit, types of lighting units and lighting intensities. Describe the short circuit duty required for all protective devices and switchgear. Indicate electrical characteristics (ie: phase voltage and number of wires) for each circuit. Provide a breakdown the estimated connection load. Document and submit to the DOTA PM for review and comment.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

Incorporate approved information into the Design Development drawings.

Drawings / Graphics / Illustrations Services

- 4.6.7 **Demolition Plans** – Provide scaled and dimensioned demolition plans with existing conditions and items to be removed per the proposed project. Include all pertinent building references as well as identify items to remain or be recycled.
- 4.6.8 **Site Plans** – Provide overall scaled and dimensioned site plan showing all existing buildings, facilities, roadways, designate building zones, work phasing, access control systems, exterior light fixture locations and types, transformer and emergency generator locations, primary and secondary power feed locations, telephone and other communication feed location and other items relevant to the proposed project area and electrical scope of work.
- 4.6.9 **Electrical Power Floor Plans** - Provide overall scaled and dimensioned floor plans indicating room names and numbers, reference gridlines, location and sizes of electrical rooms, call stations, identify electrical devices, electrical panels, outlets and other items relevant to the proposed project area. Indicate the location of the main switchboard or power panels, light panels and all equipment panels. Prepare power floor plans indicating complete wiring sequence and circuiting. Indicate voice and data device locations.
- 4.6.10 **Electrical Lighting Plans** – Provide overall scaled and dimensioned lighting plans indicating room names and numbers, reference gridlines, electrical rooms, electrical lighting, switch and switch locations, one-line diagrams and other items relevant to the proposed project area. Coordinate drawings with luminaire schedules. Provide complete wiring sequence and circuiting. Identify light fixture types and locations. Indicate exit sign locations and other life-safety or accessibility (ADA) devices. Coordinate ceiling plan with other disciplines to avoid device location conflicts.
- 4.6.11 **Enlarged or detail floor plans** – Provide detailed or enlarged floor plans for areas requiring additional information for clarity. Provide detailed or enlarged plans for technical areas, or areas requiring higher level of detail. Size electrical rooms and prepare a layout of the major electrical equipment located in each electrical room.
- 4.6.12 **Electrical One-line Diagrams** – Provide electrical one-line diagrams for the proposed project area.
- 4.6.13 **Other Diagrams** – Provide electrical one-line diagrams for telecommunications, adaptive communication systems (ACS), closed circuit television (CCTV) and American radio association (ARA) systems for the proposed project area.
- 4.6.14 **Panel Schedules** – Provide electrical panel schedules for the proposed project area.
- 4.6.15 **Luminaire Schedules** – Provide luminaire schedules for the proposed project area. Include type designations, luminaire descriptions, lamps required, manufacturer and location designations.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

- 4.6.16 **Detail Drawings** - Provide scaled drawings for conditions that require additional information and detail.

Cost Estimating Services

- 4.6.17 Provide updated construction cost estimate. Provide a cost estimate comparison between anticipated costs and approved project budget.

Construction Specifications Services

- 4.6.18 Provide specifications for the project (CSI format).
- 4.6.19 Provide list defining all light fixtures and electrical devices with catalog cut sheets or brochures which show picture or photograph of the light fixture or device being considered.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

4.7 Instrumentation and Control Systems (landC)

Planning / Coordination Services

- 4.7.1 Coordinate with HVAC and other disciplines for control system requirements and integration. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.
- 4.7.2 Define control interfaces for all package systems with local controls, including adjustable frequency drives. Prepare preliminary input/output (I/O) count. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.
- 4.7.3 Size and locate I/O locations for distributed control systems (DCSs). Coordinate I/O rack room sizing with electrical and architectural disciplines. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.

Documents / Forms / Studies Services

- 4.7.4 Summarize landC system design philosophy for each major process. Include a description of the field elements to be used for each application and preliminary set points for major landC elements. Document all information and submit as part of the Design Development Documents. Incorporate and coordinate information into the Design Development drawings.
- 4.7.5 Provide narrative to define electronics and instrumentation system engineering concepts, site and location considerations, antenna requirements (ie: types, separation, height, aircraft clearance, etc), area requirements, site communications, control linkages and electronic security considerations. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.

Drawings / Graphics / Illustrations Services

- 4.7.6 **Process Flow Diagrams** – Provide process flow diagrams for each critical system. Systems to include: process configurations, flow streams, valve and gate locations (manual and powered), chemical additions points, flow meters and other process control devices, other pertinent or supporting documents. Finalize typical control diagrams for each type of control scheme to be used.
- 4.7.7 **Process Flow Drawings** – Provide floor plans drawings indicating process equipment locations and types. Provide locations and notations for all packaged control panels and adjustable-speed drives. Include loop numbers and all instrumentation.
- 4.7.8 **Detail Drawings** - Provide scaled drawings for conditions that require additional information and detail.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

Cost Estimating Services

- 4.7.9 Provide updated construction cost estimate. Provide a cost estimate comparison between anticipated costs and approved project budget.

Construction Specifications Services

- 4.7.10 Provide specifications for the project (CSI format).

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

4.8 Landscaping Systems

Planning / Coordination Services

- 4.8.1 Provide for compliance with local code requirements, standards, and guidelines. Include compliance with accessibility (ADA), environmental design (ie: wetlands / flood plain plans / details, contaminated soils remediation plan, etc), DOTA Stormwater Management Program Plan (SWMPP), specific drainage and soil amendments required for mitigation and / or supplementation to existing soil conditions. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.
- 4.8.2 Identify and coordinate contractor staging areas, access routes and temporary access routes with landscape scope of work. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.
- 4.8.3 Provide coordination with electrical systems including, site lighting, power source and requirements, lighting fixtures and communication. Identify conflicts between utilities (above / below ground) and tree placement. Revise plantings as required. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.
- 4.8.4 Confirm specified plantings list with DOTA PM and get written approval. Provide list to identify specific plants (trees, shrubs, ground cover), sizes and spacing. Confirm availability of specified plants, if conflicts in availability, quantity or timeframe exist, provide alternate selections. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.
- 4.8.5 Provide coordination with Civil site work plans. Include for erosion control measures, rough grading, drainage plan, checking finish grades of all hardscapes / berms / planting beds / sidewalks / etc. Coordinate hardscape plan to include: sidewalks, plazas, pathways, right of way landscaping, trellis, arbors, decorative fences / gates (not security fences / gates), etc. Allow for coordination with site drainage plans and analysis. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.
- 4.8.6 Coordinate bio-swales and detention plans. Integrate site grading, drainage, vehicular and pedestrian circulation with landscape site analysis. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.

Documents / Forms / Studies Services

- 4.8.7 Provide study to determine fencing type, height and justification for fencing. The study shall also provide a cost / feasibility analysis to identify and verify recommended implementation procedures and the associated cost. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

Drawings / Graphics / Illustrations Services

- 4.8.8 **Demolition Plans** – Provide scaled and dimensioned demolition (clearing and grubbing) plans with existing conditions and items to be removed per the proposed project. Include all pertinent building references as well as identify items to remain, be relocated or recycled. Identify existing plants to be retained.
- 4.8.9 **Site Plans** – Provide an overall scaled and dimensioned site plan showing all existing buildings, facilities, roadways, designate building zones, work phasing and other items relevant to the proposed project area and landscape scope of work. Coordinate and address issues pertaining to the following: erosion control, sensitive areas, codes / guidelines, contaminated soil, landscape buffering, non-motorized / vehicular circulation, roadway plans, interdisciplinary conflicts and others as appropriate.
- 4.8.10 **Plants and Materials List** – Provide plant and material lists and schedules.
- 4.8.11 **Irrigation Plans** – Provide coordinated irrigation design drawings, schedules, references and legends. Include water and electrical point of connection, water pressure and flow availability (GPM), coverage plan, system compatibility, controller location, details (ie: back flow preventer, riser details, pipe trench details, automatic valve assembly details, thrust block details, manual drain valve details, quick coupling valve details, etc).
- 4.8.12 **Enlarged or detail floor plans** – Provide detailed or enlarged floor plans for areas requiring additional information for clarity. Provide detailed or enlarged plans for technical areas, or areas requiring higher level of detail.
- 4.8.13 **Detail Drawings** - Provide scaled drawings for conditions that require additional information and detail. Include special features (ie: water features, artwork, sculptures, signage, etc).

Cost Estimating Services

- 4.8.14 Provide updated construction cost estimate. Include preliminary plant material list and associated cost breakdowns. Provide a cost estimate comparison between anticipated costs and approved project budget.

Construction Specifications Services

- 4.8.15 Provide specifications for the project (CSI format).

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

4.9 Fire Protection

Planning / Coordination Services

- 4.9.1 Provide for water supply connections to sprinkler systems compliance with local code requirements, standards, and guidelines. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.

Drawings / Graphics / Illustrations Services

- 4.9.2 Fire Protection Systems drawings shall be coordinated by the Architect, Civil and Mechanical engineer. Items to include fire vehicle access, fire hydrants, dry or wet stand pipes, fire sprinkler systems, fire extinguishers, fire hose cabinets, fire detections systems, fire alarm systems, underground water mains and their sizes, control valve locations, fire alarm panel locations, smoke control / removal systems, underground valve meter pits, standpipe locations and other related items.

Cost Estimating Services

- 4.9.3 Provide updated construction cost estimate. Provide a cost estimate comparison between anticipated costs and approved project budget.

Construction Specifications Services

- 4.9.4 Provide specifications for the project (CSI format). Specifications shall be in the form of an outline covering all fire protection items, equipment and materials including manufacturers and model numbers to be used in the project. Include smoke / heat detectors and pressure, flow, and tamper switches.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

4.10 Special Systems - Communications

Planning / Coordination Services

- 4.10.1 Determine site or location constraints. Identify required radio paths and propagation requirements. Provide for bonding and grounding requirements. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.
- 4.10.2 Indicate equipment selection, including special equipment requiring development, research, or breadboard methods to meet the requirements. Define requirements and concepts for special information technology systems. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.
- 4.10.3 Establish antenna requirements such as types, separation, tower heights, aircraft clearance, and area requirements. Antenna transmission lines, terminations and switching. Include communication, control cables and radio links. Establish requirements for interference and clearance requirements. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.
- 4.10.4 Coordinate air conditioning requirements including humidity and dust control requirements. Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.

Documents / Forms / Studies Services

- 4.10.5 Provide sufficient information including engineering concept for the systems proposed (ie: FAA requirements for intercom system, telephone system, public address system, radio and antenna systems, television antenna systems, protection alarm systems, respond tie-ins, security systems and any other data or systems deemed necessary). Document and submit to the DOTA PM for review and comment. Incorporate approved information into the Design Development drawings.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

Drawings / Graphics / Illustrations Services

4.10.6 Communication systems drawings shall be coordinated by the Architect and Electrical engineer. Items to include communication rooms, equipment schedules, schematic layouts and interface, equipment manuals, operating procedures, and other related items. Provide for wiring and cable requirements (connections and terminations), power and lighting requirements, emergency or standby requirements, telephone, data highway control system, local area networks (LAN), office automation, equipment, instrumentation arrangement and space requirements. Identify requirement for racks, consoles for individual mounting and communication rooms. Provide drawings with all equipment drawn to scale. One-line diagrams of communication system shall indicate intercom, speakers, equipment, terminal boards and cabinets.

Cost Estimating Services

4.10.7 Provide updated construction cost estimate. Itemize proposed equipment costs. Provide a cost estimate comparison between anticipated costs and approved project budget.

Construction Specifications Services

4.10.8 Provide specifications for the project (CSI format).

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

4.11 Special Systems – Security

Planning / Coordination Services

4.11.1 Locate major input / output termination locations and control panels for special systems.

Documents / Forms / Studies Services

4.11.2 Provide a narrative description of the proposed security systems including a schematic diagram and integration with the existing. Identify, record and describe significant opportunities and constraints. Provide recommendations and solutions for anticipated constraints or conflicts. The study shall also provide a cost/feasibility analysis to identify and verify recommended implementation procedures and the associated cost.

Drawings / Graphics / Illustrations Services

4.11.3 Security systems drawings shall be coordinated by the Architect and Electrical engineer. Items to include: security rooms, site security, designated secured areas, controlled areas, closed circuit television (CCTV) systems, equipment rooms, storage areas, detainment facilities, equipment schedules, schematic layouts and interface, identification and access control system and other related items.

4.11.4 CCTV / monitor and equipment rooms with all equipment drawn to scale (this requirement is to establish the space needs for equipment). Provide adequate working clearance for monitors and operator console.

4.11.5 One-line diagram of security system shall indicate control panels, sensors, cameras, monitors, telephone interface, and any other system devices critical to operation.

Cost Estimating Services

4.11.6 Provide updated construction cost estimate. Provide a cost estimate comparison between anticipated costs and approved project budget.

Construction Specifications Services

4.11.7 Provide specifications for the project (CSI format).

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

5. Construction Documents Requirements

- 5.1 General
- 5.2 Architectural Systems
- 5.3 Civil and Environmental Systems
- 5.4 Structural Systems
- 5.5 Mechanical Systems
- 5.6 Electrical Systems
- 5.7 Instrumentation and Control Systems
- 5.8 Landscaping Systems
- 5.9 Fire Protection
- 5.10 Special Systems – Communications
- 5.11 Special Systems – Security

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

5. Construction Documents Requirements

5.1 General

- 5.1.1 The **Design Effort** shall constitute the following phases: (1) Conceptual Design, (2) Schematic Design, (3) Design Development, (4) Construction Documents. **Successful completion of the Construction Documents Phase shall constitute 100% completion of the Design Effort.**
- 5.1.2 The **Construction Documents Phase** shall follow the successful completion of the **Design Development Phase**. The **Construction Documents Phase** requires the DOR to complete the construction contract documents for bidding and construction. The project specifications shall be completed and coordinated with the drawings. The bid requirements and related items shall be completed and finalized. All permit issues shall be resolved with solutions incorporated into the design. Include all information, research findings and comments from the previous phases. The Construction Documents drawings shall be signed and sealed by the DOR ready for the Advertising and Bidding Phase.
- 5.1.3 The **Construction Documents Phase** deliverables shall be submitted to the DOTA for review and approval. The Construction Documents for the DOTA review shall be a two-step process. The first submittal will be the **100% Final Submittal** which the DOTA shall review and provide comments. The second submittal shall be the **Corrected Final Submittal** (incorporating the comments from the DOTA's review of the **100% Final Submittal**).
- 5.1.3.1 **100% Final Submittal** – This is the first submittal of the Construction Documents completed by the DOR. The DOTA will then review the documents and provide comments for the DOR to address / incorporate.
- 5.1.3.2 **Corrected Final Submittal** - The DOR shall incorporate and address the DOTA's comments of the first **100% Final Submittal** to create the **Corrected Final Submittal**. The **Corrected Final Submittal** documents, with the State of Hawaii Airports Division DOT signature title block, shall be used by the DOTA PM for the bidding process.
- 5.1.3.3 **DOTA Approval** - The DOR shall receive written approval of the Construction Documents by DOTA prior to printing the advertising / bid sets.
- 5.1.4 The DOR shall be responsible for a formal presentation to the DOTA, stakeholders and project sponsors upon completion of the **Construction Documents Phase** documents. This presentation shall provide an overview of the **Construction Documents Phase**. This presentation shall include sufficient detail to demonstrate that all the requirements of the project are identified, understood and addressed.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

5.2 Architectural Systems

Drawings / Graphics / Illustrations Services

- 5.2.1 **Verification of submitted documents** - The DOR shall submit a letter with DOR's signature to state that all drawings, specifications and / or related documents submitted as part of the **Construction Documents Phase** are complete and coordinated. The DOR shall confirm that all comments and studies completed in the previous phases incorporated with all information presented are in compliance with the intent of the DOTA standards and / or recommendations.
- 5.2.2 **Title Sheets** – Complete project title, project reference numbers, sheet index and numbers, project location, state map, project team and contact information, signature blocks and other pertinent or general information for the project.
- 5.2.3 **Building Information** – Complete building information, floor area tabulations, building code assumptions, building types and designations, all other pertinent code, zoning, governmental regulations incorporated or associated with the completed design.
- 5.2.4 **General Notes** – Complete project general notes and conditions of the construction documents, project and final design.
- 5.2.5 **Site Plans** – Complete scaled and dimensioned site plans for all existing buildings, facilities, contours, roadways, utilities, and other items relevant to the proposed project area. Include layout of the proposed roadways, access drives, parking areas, site utilities and proposed building location(s).
- 5.2.6 **Demolition Plans** – Complete scaled and dimensioned demolition plans with existing conditions and items to be removed per the proposed project. Include all pertinent building references as well as identify items to remain or be recycled.
- 5.2.7 **Egress and Fire Extinguisher Layout Floor Plans** - Complete drawings for existing exit path travel distances, fire sprinkler requirements, fire protection ratings, fire extinguisher locations, exit width requirements, building type of construction, occupancy classification or separations and other pertinent life and safety assumptions.
- 5.2.8 **Floor Plans** - Complete scaled and dimensioned floor plan(s). Include materials designation, graphics legend, walls, columns, partitions, expansion joints, structural grids, room names and numbers, equipment, clear floor spaces, required accessible paths of travel, required exit paths and other pertinent information. Complete all building references, key drawings, section “cut” indications and areas to be detailed referenced and coordinated. Complete door, window and louver reference marks on plans with coordinated schedules and details.
- 5.2.9 **Reflected Ceiling Plans** – Complete scaled and dimensioned reflected ceiling plan(s). Include materials designation, graphics legend, walls, columns, ceiling heights, lighting, ceiling mounted devices, mechanical and electrical devices, fire

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
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sprinkler heads, emergency and safety devices, expansion joints, structural grids, room names and numbers, equipment and other pertinent information. Complete reference points of all suspended acoustic ceiling patterns and special ceiling patterns.

- 5.2.10 **Furniture and Equipment Floor Plans** - Complete scaled and dimensioned furniture and equipment floor plan(s). Include all movable and built in furniture and equipment, fixed equipment. Identify required clear floor spaces required around equipment. Include and verify minimum dimensions and clearances for furniture and equipment access.
- 5.2.11 **Roof Plans** - Complete scaled and dimensioned roof plan(s). Include materials designation, graphics legend, equipment, roof drains, overflow drains, gutters, expansion joints, roof scuppers, roof scuttle locations, parapets, flashing areas detailed, roof slopes, skylights, vents, roof jacks, equipment curbs, equipment screening, structural grids and other pertinent information. Indicate UL rating numbers for rated ceiling systems where applicable. Locate equipment screens. Complete dimensions locating all equipment or rooftop devices and / or significant penetrations.
- 5.2.12 **Exterior Elevations** - Complete scaled and dimensioned building or structure exterior elevations. Include materials designation, graphics legend, windows and louvers, landscaping, floor reference elevations, expansion joints, structural grids and architectural design features. Locate and dimension wall mounted items, equipment, louvers, devices, etc. Locate and provide details for all expansion joints. Locate and dimension all reveals.
- 5.2.13 **Building Sections** - Complete scaled and dimensioned building sections. Include materials designation, graphics legend, assumed floor elevations and reference elevations, expansion joints, structural grids, waterproofing, mechanical and electrical systems roughed-in, equipment, areas to be detailed and architectural design features.
- 5.2.14 **Enlarged or detail floor plans** – Complete detail and enlarged floor plans for areas requiring additional information for clarity. Provide detailed or enlarged plans for bathrooms, stair and stairwells, technical areas and all other areas requiring higher level of detail.
- 5.2.15 **Detail Stair Plans, Sections and Elevations** - Complete scaled and dimensioned drawings for all stairways, including guardrail and handrail information / details for the project area. Include dimensioned stair width and length, tread size and riser heights.
- 5.2.16 **Detail Elevator Plans, Sections and Elevations** – Complete scaled and dimensioned drawings for all elevators, including cab, pit, hoistways, penthouse, shafts, machine rooms or closets, materials and finishes and other pertinent information / details for the project area. Confirm compliance with State Department of Labor and Industrial Relations.
- 5.2.17 **Signage plans** – Complete floor plans with signage locations. Include all signage types, details for artwork / graphics, fonts size and types, sign mounting

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
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heights and mounting or fastening details.

- 5.2.18 **Interior elevations** – Complete scaled and dimensioned interior elevation drawings with room materials, built-ins, equipment, fire alarm pull stations and extinguishers, architectural features, signage, mechanical and electrical devices and room heights indicated. Include detail references and details. Locate all items mounted on wall with dimensions. Complete casework identification, dimensions and details.
- 5.2.19 **Room Finish Schedule** – Complete room and finish materials schedule. Coordinate materials designation with location on plans, elevations and / or sections. Complete schedules to identify finishes that require building code, special requirements or performance (ie: flame spread ratings, etc).
- 5.2.20 **Door and Window Schedules and Types** - Complete door, window and louver schedules with required fire-ratings. Include coordination with floor plans for location, types, sizes and references for details. Provide coordination to the specifications sections. The door hardware types coordinated with the DOTA and master door / key systems. Include coordinated head / jamb / sill reference symbols.
- 5.2.21 **Wall Types and Sections** – Complete wall types and details. Complete wall sections and details for code requirements including fire ratings (ie: UL reference numbers, etc).
- 5.2.22 **Detail Drawings** – Complete scaled detail drawings for conditions that require additional information and detail. Include details per the DOTA standards for all expansions joints.

Cost Estimating Services

- 5.2.23 Complete and submit a Construction Cost Estimate for each building system and its related discipline.

Construction Specifications Services

- 5.2.24 Submit complete and fully coordinated specifications in CSI format.
- 5.2.25 Submit complete and fully coordinated sections per the DOTA standards:
- Notice to Bidders
 - Instructions for Contractor's Licensing
 - Special Provisions
 - Supplemental Special Conditions
 - Airports Division Supplement to Special Provisions
 - Notice of Requirement for Affirmative Action to Ensure Employment Opportunity (if required)
 - General Information Regarding Disadvantage Business Enterprises (if required)
 - Regulatory Requirements for Federal-Aid Projects Regarding Disadvantage Business Enterprises (if required)
 - Required Federal-Aid Contract Provisions (if required)

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

Construction Schedule Services

5.2.26 Complete and submit estimated construction schedule.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

5.3 Civil and Environmental Systems

Drawings / Graphics / Illustrations Services

- 5.3.1 **General Notes** – Complete project general notes and conditions of the construction documents.
- 5.3.2 **Topographical Survey Plan** – Complete scaled and dimensioned site topographical plan survey of the project area and adjacent areas pertinent to the project.
- 5.3.3 **Site Demolition Plan** – Complete scaled and dimensioned site plans with existing conditions and items to be removed per the scope of work. Include demolition requirements and limits. Identify items to reused, relocated or be recycled.
- 5.3.4 **Site Plan** – Complete scaled and dimensioned site plans with building footprints and finished floor level elevation referenced, site topographical information coordinated, reference spot elevations, area designations, site boundaries, setbacks, building footprint reference elevations, aircraft access indicating aircraft parking positions, driveways, roadways and other pertinent site information. Set finished grades, overall major surfaces, roads, walkways, paths. Indicate temporary and final fencing plan including required barriers and other proposed hard surfaces. Indicate location of streams, wetlands, and their buffers, floodplains, hazardous waste / contaminated soil areas, and other environmentally sensitive areas as they pertain to the project area. Identify all site permanent features to be constructed on the site. Identify aircraft aprons, taxiways, taxilanes, design aircraft and design solution showing aircraft traffic projection and pavement thickness design. Site plan drawings to include coordinated information from the DOTA.
- 5.3.5 **Site Grading Plan** - Complete site grading plan including easements, site improvements, reference elevations, existing or new grade contour lines, locations of storm and drainage lines and catch basins with invert elevations and storm water detention / retention facilities or systems. Drawings shall be coordinated with the DOR and geotechnical engineer. Complete grading and drainage site plan indicating cross sections and profiles, spot elevations, and detail symbols of all conditions detailed.
- 5.3.6 **Site BMP Drainage Plan** - Complete grading and drainage site plan including, easements, construction barricades, filter socks, access roads, reference elevations, existing or new grade contour lines, locations of existing and proposed storm and drainage inlets and lines and catch basins with invert elevations and storm water detention / retention facilities or systems. Locate new and / or existing storm water management systems and facilities on the plans. Complete erosion control site plan and detail symbols of all conditions to be detailed.
- 5.3.7 **Site Utility Plans** - Complete utilities site plan including easements, locations of all site improvements, locations of all above and below ground utilities including power, exterior lighting, domestic water, fire mains, hydrants, sanitary sewer,

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

storm water drainage, natural gas, fuel lines, steam lines, communications, NAVAIDS and locations of all valves, meters, vaults, manhole covers, pull boxes, and other related items or structures. Complete layouts for airfield electrical circuits, NAVAIDS, and underground utilities. Include sizes of all utility lines, vaults, manhole covers, and pull boxes, invert elevations. Indicate detail symbols of all conditions detailed.

- 5.3.8 **Construction Traffic Flow Plans** – Complete scaled plans with traffic flow during construction for access onto, off and around the project area. Indicate contractor staging, storage, access, and off-site access corridors.
- 5.3.9 **Roadway Layout Plans** - Complete scaled plan with new and existing layout for roadways. Include structures, roads, and major site elements and horizontal locations. Include truck access corridors and maneuvering requirements.
- 5.3.10 **Parking areas or structures** - Complete scaled and dimensioned parking area plans. Include stall size and arrangements. Include parking counts and parking stall type composition. Complete pavement analysis and striping site plan indicating easements, locations of all driveways, parking areas with parking stalls (new and existing), sidewalks and curbs, parking spaces required by code and legends. Indicate dimensioned parking layout, and detail symbols of all conditions detailed.
- 5.3.11 **Water and Sewer Profiles** – Complete scaled drawings and details for piping profiles. Include reference elevations, station points and inverts etc.
- 5.3.12 **Drain Profiles** – Complete scaled drawings for drain piping profiles. Include reference elevations, station points and inverts, etc. Develop typical sections for each type of paving, including surface drainage. Complete horizontal and vertical layouts for all airfield paving, emergency roads, and drainage features. Complete layout for yard piping 18 inches and larger as well as for plan drain layout. Identify and locate corridors for smaller piping and other utilities. Complete grading and drainage site plan indicating cross sections and profiles, spot elevations, and detail symbols of all conditions detailed.
- 5.3.13 **Detail Drawings** - Complete scaled drawings for special conditions that require additional information and details.

Cost Estimating Services

- 5.3.14 Complete and submit a Construction Cost Estimate for work scope.

Construction Specifications Services

- 5.3.15 Submit complete and fully coordinated specifications in CSI format.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

5.4 Structural Systems

Documents / Forms / Studies Services

- 5.4.1 Complete structural design building calculations, assumptions, design loads, shear and bearing wall design, floor and roof framing members and other pertinent information. Submit as part of the Construction Documents.
- 5.4.2 Complete list of structural special inspections that will be required during construction. Submit as part of the Construction Documents.

Drawings / Graphics / Illustrations Services

- 5.4.3 **General Notes** – Complete project general notes and conditions of the construction documents.
- 5.4.4 **Demolition Plans** – Complete scaled and dimensioned demolition plans with existing conditions and items to be removed per the proposed project structural scope of work. Include all pertinent building references as well as identify items to remain, reused or be recycled.
- 5.4.5 **Foundation Plans** - Complete scaled drawings of the building or structure foundation plan. Include grid locations, columns and walls, foundation sizes, concrete slabs on grade, concrete underlayment. Include location and dimensions for slab depressions or level change with reference floor elevations. Include drawings and specifications for areas that require permanent or temporary shoring. Include location and sizes grade beams. Include retaining walls or retaining conditions, coordinate waterproofing with other disciplines. Coordinate floor and foundation elevations.
- 5.4.6 **Floor Framing Plans** - Complete scaled drawings of the building or structural floor framing plans. Include building reference gridlines, columns and walls, shear wall locations, materials composition, structural member sizes, reference floor elevations and other pertinent information. Include structural spans and spacing of all members, bracings and frames. Indicate framing members and column sizes. Coordinate and detail locations and sizes of floor openings coordinated with other disciplines.
- 5.4.7 **Roof Framing Plans** – Complete scaled drawings of the building structural roof framing plans. Include building reference gridlines, materials composition, structural member sizes, reference elevations and other pertinent information. Include structural spans and spacing of all members, bracings and frames. Indicate framing members and sizes. Coordinate and detail locations and sizes of roof openings coordinated with other disciplines.
- 5.4.8 **Building Sections** - Complete scaled drawings of the building sections. Include typical building composition as well as special areas and / or conditions. Include reference gridlines, materials composition, structural members, reference elevations and other pertinent information. Complete structural building sections, transverse and longitudinal with vertical relationships.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

- 5.4.9 **Enlarged or detail floor plans** – Complete enlarged detail floor plans for areas requiring additional information for clarity. Provide detailed or enlarged plans for technical areas or areas requiring higher level of detail.
- 5.4.10 **Structural Systems Drawings** - Complete scaled detailed drawings for structural systems (ie: steel deck, steel framing and connections, truss design, pre-cast concrete details, site cast concrete reinforcing and details, CMU wall details, retaining walls or other retaining conditions, shear walls or braced frames, etc).
- 5.4.11 **Detail Drawings** - Complete scaled drawings for conditions that require additional information and detail.

Cost Estimating Services

- 5.4.12 Complete construction cost analysis with the necessary supporting information, including technical data and materials selected for the project.

Construction Specifications Services

- 5.4.13 Submit complete and fully coordinated specifications in CSI format.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

5.5 Mechanical Systems

Documents / Forms / Studies Services

- 5.5.1 Complete final equipment sizing, line sizing and support calculations. Submit as part of the Construction Documents.
- 5.5.2 Complete calculations for the hydraulic profile for all major gravity system pipelines and hydraulic structures. Submit as part of the Construction Documents.
- 5.5.3 Complete cooling / heating load calculations for HVAC equipment sizing including energy code requirements and selected building construction materials. Complete HVAC equipment schedules and data sheets. Submit as part of the Construction Documents.
- 5.5.4 Complete calculations for inside design temperatures, relative humidity, outside wet and dry bulb design temperatures, "U" factors for the type of construction proposed and project insulation values and / or sunshades. Submit as part of the Construction Documents.

Drawings / Graphics / Illustrations Services

- 5.5.5 **General Notes** – Complete project general notes and conditions of the construction documents.
- 5.5.6 **Demolition Plans** – Complete scaled and dimensioned demolition plans with existing conditions and items to be removed per the proposed project mechanical scope of work. Include all pertinent building references as well as identify items to remain or be recycled.
- 5.5.7 **Site Plans** – Complete scaled and dimensioned site plans indicating all existing buildings, facilities, roadways, designate building zones, work phasing and other items relevant to the proposed project area and mechanical scope of work.
- 5.5.8 **Mechanical Floor Plans** - Complete scaled and dimensioned floor plans. Include room names and numbers, location of janitorial, utility and service closets, plumbing walls and access locations, locate mechanical rooms and size, locate vertical chases, plumbing fixtures, supply and wastewater piping one-line diagrams, cleanouts, floor sinks, floor drains, condensate drain locations, downspouts and other items relevant to the proposed project area. Include for mechanical rooms all equipment and required and connecting ductwork drawn to scale, routing of major piping systems and ductwork for project. Include limits and zones.
- 5.5.9 **Mechanical Reflected Ceiling Plans** - Complete scaled and dimensioned reflected ceiling plans including room names and numbers, location of all air handling and refrigeration equipment, duct locations, routes and sizes, air diffuser locations, mechanical equipment locations and sizes, vertical exhaust ducts, temperature control locations, system connection locations. Include, duct

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

sizes and materials, special fire rating requirements with UL reference design numbers, mechanical equipment designations and sizes, vertical exhaust duct sizes and fire damper locations. Include ventilation design drawing for fan locations, type of equipment, airflows.

- 5.5.10 **Mechanical Roof Plans** - Complete scaled and dimensioned roof plans. Include roof equipment, vents, ducks, roof jacks, roof penetrations, gutters and downspouts, roof drains and other items relevant to the proposed project area. Include route of storm drains to storm sewer.
- 5.5.11 **Mechanical Sections** - Complete scaled and dimensioned sections of mechanical room showing equipment and ductwork. Include typical section of plenum space when used for ductwork, typical sections of space above for fume hoods, exhaust ducts etc. Include routing or right-of-way for major duct runs. Include building section showing riser and branch lines, fixtures and equipment.
- 5.5.12 **Enlarged or detail floor plans** – Complete detailed or enlarged floor plans for areas requiring additional information for clarity. Include detailed or enlarged plans for technical areas or areas requiring higher level of detail. Include all plumbing fixtures including those for accessibility (ADA) drawn to scale.
- 5.5.13 **Mechanical Fire Sprinkler Plans** - Complete scaled and dimensioned plans indicating fire sprinkler head locations, piping, connection point and other items relevant to the proposed project area. Include service hydrant, standpipe, test valve, and fire pump locations, risers and hose cabinets.
- 5.5.14 **Mechanical Equipment Schedules** – Complete mechanical equipment schedule list of equipment. Include model numbers, sizes, weight and power requirements. Include all pumps, motors, exhaust fans, fan coil units, condenser units, holding tanks, heaters and other proposed mechanical equipment for the project. Show sump pump and sewage ejector locations.
- 5.5.15 **Mechanical Fixture Schedules** – Complete mechanical plumbing fixture schedule list of equipment. Include model numbers, sizes, weight and other requirements.
- 5.5.16 **Mechanical Sanitary Piping Diagrams** – Complete sanitary piping diagrams for the proposed project area.
- 5.5.17 **Mechanical Water Piping Diagrams** – Complete water piping diagrams for the proposed project area.
- 5.5.18 **Standpipe Schematic Diagrams** – Complete standpipe schematic diagrams for the proposed project area.
- 5.5.19 **Detail Drawings** - Complete scaled drawings for conditions that require additional information and detail.

Cost Estimating Services

- 5.5.20 Complete construction cost analysis with the necessary supporting information,

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

including technical data and materials selected for the project.

Construction Specifications Services

5.5.21 Submit complete and fully coordinated specifications in CSI format.

5.5.22 Submit complete list of all plumbing fixtures with catalog cut sheets.

5.5.23 Submit complete list of all equipment with catalog cut sheets.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

5.6 Electrical Systems

Drawings / Graphics / Illustrations Services

- 5.6.1 **General Notes** – Complete project general notes and conditions of the construction documents.
- 5.6.2 **Demolition Plans** – Complete scaled and dimensioned demolition plans with existing conditions and items to be removed per the proposed project. Include all pertinent building references as well as identify items to remain or be recycled.
- 5.6.3 **Site Plans** – Complete overall scaled and dimensioned site plan showing all existing buildings, facilities, roadways, designate building zones, work phasing, access control systems, exterior light fixture locations and types, transformer and emergency generator locations, primary and secondary power feed locations, telephone and other communication feed location and other items relevant to the proposed project area and electrical scope of work.
- 5.6.4 **Electrical Power Floor Plans** – Complete scaled and dimensioned floor plans indicating room names and numbers, reference gridlines, location and sizes of electrical rooms, call stations, identify electrical devices, electrical panels, outlets and other items relevant to the proposed project area. Include the location of the main switchboard or power panels, light panels and all equipment panels. Include power floor plans indicating complete wiring sequence and circuiting. Include voice / data device locations.
- 5.6.5 **Electrical Lighting Plans** - Complete scaled and dimensioned lighting plans indicating room names and numbers, reference gridlines, electrical rooms, electrical lighting, switch and switch locations, one-line diagrams and other items relevant to the proposed project area. Coordinate drawings with luminaire schedules. Complete wiring sequence and circuiting. Identify light fixture types and locations. Indicate exit sign locations and other life-safety or accessibility (ADA) visual and audible devices.
- 5.6.6 **Enlarged or detail floor plans** – Complete enlarged detail floor plans for areas requiring additional information for clarity. Include detailed or enlarged plans for technical areas or areas requiring higher level of detail. Include electrical rooms sizes and layout of the major electrical equipment located in each electrical room.
- 5.6.7 **Electrical One-line Diagrams** – Complete electrical one-line diagrams for the proposed project area.
- 5.6.8 **Other Diagrams** – Complete electrical one-line diagrams for telecommunications, adaptive communication systems (ACS), closed circuit television (CCTV) and American radio association (ARA) systems for the proposed project area.
- 5.6.9 **Panel Schedules** – Complete electrical panel schedules for the proposed project area.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

5.6.10 **Luminaire Schedules** – Complete luminaire schedules for the proposed project area. Include type designations, luminaire descriptions, lamps required, manufacturer and location designations.

5.6.11 **Detail Drawings** - Complete scaled drawings for conditions that require additional information and detail.

Cost Estimating Services

5.6.12 Complete construction cost analysis with the necessary supporting information, including technical data and materials selected for the project.

Construction Specifications Services

5.6.13 Submit complete and fully coordinated specifications in CSI format.

5.6.14 Submit complete list of all light fixtures with catalog cut sheets. Provide documents which show picture or photograph of the light fixture or device.

5.6.15 Submit complete list of all electrical devices equipment with catalog cut sheets.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

5.7 Instrumentation and Control Systems

Drawings / Graphics / Illustrations Services

- 5.7.1 **Process Flow Diagrams** – Complete process flow diagrams for each critical system. Include process configurations, flow streams, valve and gate locations (manual and powered), chemical additions points, flow meters and other process control devices, other pertinent or supporting documents. Finalize typical control diagrams for each type of control scheme to be used.
- 5.7.2 **Process Flow Drawings** – Complete floor plans drawings indicating process equipment locations and types. Provide locations and notations for all packaged control panels and adjustable-speed drives. Include loop numbers and all instrumentation.
- 5.7.3 **Detail Drawings** - Complete scaled drawings for conditions that require additional information and detail.

Cost Estimating Services

- 5.7.4 Complete construction cost analysis with the necessary supporting information, including technical data and materials selected for the project.

Construction Specifications Services

- 5.7.5 Submit complete and fully coordinated specifications in CSI format.
- 5.7.6 Submit complete instrument lists and provide corresponding data sheets.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

5.8 Landscaping Systems

Documents / Forms / Studies Services

- 5.8.1 Submit complete final list of plants. Submit as part of the Construction Documents.

Drawings / Graphics / Illustrations Services

- 5.8.2 **Demolition Plans** – Complete scaled and dimensioned demolition (clearing and grubbing) plans with existing conditions and items to be removed per the proposed project. Include all pertinent building references as well as identify items to remain, be relocated or recycled. Identify existing plants to be retained.
- 5.8.3 **Site Plans** – Complete overall scaled and dimensioned site plan showing all existing buildings, facilities, roadways, designate building zones, work phasing and other items relevant to the proposed project area and landscape scope of work. Coordinate and address issues pertaining to erosion control, sensitive areas, codes / guidelines, contaminated soil, landscape buffering, non-motorized / vehicular circulation, roadway plans, interdisciplinary conflicts, and others as appropriate.
- 5.8.4 **Plants and Materials List** – Complete plant and material lists and schedules.
- 5.8.5 **Irrigation Plans** – Complete coordinated irrigation design drawings, schedules, references and legends. Include water and electrical point of connection, water pressure and flow availability (GPM), coverage plan, system compatibility, controller location, details (ie: back flow preventer, riser details, pipe trench details, automatic valve assembly details, thrust block details, manual drain valve details, quick coupling valve details, etc).
- 5.8.6 **Enlarged or detail floor plans** – Complete detailed or enlarged floor plans for areas requiring additional information for clarity. Include detailed or enlarged plans for technical areas or areas requiring higher level of detail.
- 5.8.7 **Detail Drawings** – Complete scaled drawings for conditions that require additional information and detail. Include special features such as water features, artwork, sculptures, signage, etc.

Cost Estimating Services

- 5.8.8 Complete construction cost analysis with the necessary supporting information, including technical data and materials selected for the project. Include plant material list and associated cost breakdowns.

Construction Specifications Services

- 5.8.9 Submit complete and fully coordinated specifications in CSI format.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

5.9 Fire Protection

Drawings / Graphics / Illustrations Services

5.9.1 Complete Fire Protection Systems drawings coordinated by the Architect, Civil and Mechanical engineer. Include fire vehicle access, fire hydrants, dry or wet stand pipes, fire sprinkler systems, fire extinguishers, fire hose cabinets, fire detections systems, fire alarm systems, underground water mains and their sizes, control valve locations, fire alarm panel locations, smoke control and removal systems, underground valve meter pits, standpipe locations and other related items. Complete schedules for all major equipment on drawings.

Cost Estimating Services

5.9.2 Provide construction cost estimate for fire protection systems.

Construction Specifications Services

5.9.3 Submit complete and fully coordinated specifications in CSI format.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

5.10 Special Systems – Communications

Drawings / Graphics / Illustrations Services

5.10.1 Complete communication systems drawings coordinated by the Architect, Electrical engineer. Include communication rooms, equipment schedules, schematic layouts and interface, equipment manuals, operating procedures, and other related items. Provide for wiring and cable requirements plus terminations, power and lighting requirements, including emergency or standby requirements, telephone, data highway control system, LAN, office automation, equipment and instrumentation arrangement and space requirements. Provide for space requirements for racks, consoles (including individual mounting), communication rooms with all equipment drawn to scale, one-line diagram of communication system shall indicate intercom, speakers, equipment, terminal boards and cabinets.

Cost Estimating Services

5.10.2 Provide construction cost estimate for communication systems.

Construction Specifications Services

5.10.3 Submit complete and fully coordinated specifications in CSI format.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

5.11 Special Systems – Security

Drawings / Graphics / Illustrations Services

- 5.11.1 Complete Security systems drawings coordinated by the Architect, Electrical engineer. Include security rooms, site security, designated secured areas, controlled areas, closed circuit television (CCTV) systems, equipment rooms, storage areas, detainment facilities, equipment schedules, schematic layouts and interface, identity (ID) access control system, and other related items.
- 5.11.2 Complete CCTV / monitor and equipment rooms with all equipment drawn to scale (this requirement is to establish the space needs for equipment). Include adequate working clearance for monitors and operator console.
- 5.11.3 Complete one-line diagram of security system shall indicate control panels, sensors, cameras, monitors, telephone interface, and any other system devices critical to operation.

Cost Estimating Services

- 5.11.4 Provide construction cost estimate for communication systems.

Construction Specifications Services

- 5.11.5 Submit complete and fully coordinated specifications in CSI format.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

6. Advertising & Bidding Phase

- 6.1 General
- 6.2 Pre-bid Conference
- 6.3 Addendum Preparation and Issue

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

6. Advertising & Bidding Phase

6.1 General

- 6.1.1 The construction documents, which receive final written approval from the DOTA PM, form the **Bid Documents**. The **Bid Documents** define the project workscope from which qualified bidders formulate the actual anticipated construction cost and schedule.
- 6.1.2 The DOR shall support the DOTA PM in orchestrating the steps to obtain construction pricing.
- 6.1.3 The **Advertising & Bidding Phase** summary of objectives:
- Attend Pre-bid conference
 - Respond to requests for clarification and substitution requests
 - Prepare Addendums

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

6.2 Pre-Bid Conference

- 6.2.1 A **Pre-Bid Conference** will be scheduled for all interested bidders and their representatives, which the DOR must attend.
- 6.2.2 The DOR shall be responsible and tasked with the following to assist the DOTA PM:
- 6.2.2.1 Create sign-in sheet and have all attendees sign in.
 - 6.2.2.2 Describe the project and explain the DOTA's expectations.
 - 6.2.2.3 Prepare minutes of the **Pre-Bid Conference** and distribute to the DOTA PM and the DOR. Minutes of the Pre-Bid conference shall be distributed through an addendum.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

6.3 Addendum Preparation and Issue

- 6.3.1 The DOR shall prepare and submit all addenda to the DOTA PM for review and approval. The DOR shall provide support to the DOTA PM to complete and finalize all addendum. **ONLY DOTA shall issue addendum to the bidding contractors.**
- 6.3.2 **Addendums** to the bid documents, issued by the DOTA PM, shall be distributed no later than ten (10) days before sealed bids are due or as determined by the DOTA PM.
- 6.3.3 The DOR shall not have any direct contact with any prospective bidders and shall refer all questions to the DOTA PM.
- 6.3.4 Addendum preparation – The DOTA PM shall provide the DOR with a the format for the addendum.
- 6.3.5 Express a change only once, then refer to the addendum whenever necessary. One expressed correction should serve for all repetitive changes.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

7. Construction Administration

- 7.1 General
- 7.2 Pre-Construction Conference
- 7.3 Construction Observation
- 7.4 Special Inspections
- 7.5 Submittals
- 7.6 Clarifications and Changes to the Work Scope
- 7.7 Project Completion

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

7. Construction Administration

7.1 General

- 7.1.1. Following the DOTA's contract for construction award and the issue of the contractor's notice to proceed, the project starts to move "off of the paper" and toward its actual construction. The DOR's role during the **Construction Administration Phase** shifts to implementation and support to the DOTA PM's management of the construction process.
- 7.1.2. The DOR's responsibility to provide **Construction Administration** services starts with the award of the contract for construction and ends when the final payment is issued.
- 7.1.3. The DOR shall advise and consult with the DOTA PM during the construction of the project. If directed by the DOTA PM, the DOR may be given limited authority to act on behalf of the DOTA PM as stipulated in the DOR's scope of services for this phase.
- 7.1.4. If the DOTA PM has contracted services for Construction Project Management with a Project Construction Manager (CM), the DOR shall provide support for the CM as directed by the DOTA PM or as stipulated in the DOR's scope of services for this phase. In some instances the DOR's services and responsibilities may be transferred to the CM.
- 7.1.5. The construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection of the work as well as the contractor's performance of the construction shall be the sole responsibility of the Contractor.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

7.2 Pre-Construction Conference

7.2.1 The **Pre-Construction Conference** will be held to establish the lines of communication among all project participants and to set the tone for the project's construction.

7.2.2 The DOTA PM may request the DOR to attend the Pre-Construction Conference.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

7.3 Construction Observation

- 7.3.1 The DOR shall conduct **Construction Administration** which involves site visits at intervals appropriate to the stage of construction. The number and time of site visits may be requested by the DOTA PM.
- 7.3.2 The DOR shall submit field reports to document conditions observed during the site visit. These field reports shall be numbered sequentially and copies distributed to the DOTA PM. The field report shall contain the following information:
- 7.3.2.1 Date and time.
 - 7.3.2.2 Task or item observed.
 - 7.3.2.3 Follow-up or actions required as a result of observed conditions.
 - 7.3.2.4 Author of document with date and signature.
- 7.3.3 The DOR shall document and inform the DOTA PM of field conditions observed that appear to vary from the **Bid Documents**.
- 7.3.4 If determined by the DOTA PM the DOR may be requested to provide a full-time field staff throughout construction.
- 7.3.5 The DOR shall ensure the aesthetic quality of the project, compliance with the design intent, and design integrity of systems. The DOR shall inform the DOTA PM if the work observed appears to vary from the intended design intent.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

7.4 Special Inspections

- 7.4.1 The DOR may be requested to provide **Special Inspections** during construction as required by the type of construction being performed.
- 7.4.2 **Special Inspections** to include: (1) Concrete, (2) Bolts intalled in concrete, (3) Special moment-resisting concrete frame, (4) Reinforcing steel and pre-stressing steel tendons, (5) Structural welding, (6) High-strength bolting, (7) Structural masonry, (8) Reinforced gypsum concrete, (9) Insulating concrete fill, (10) Spray-applied fireproofing, (11) Piling, drilled piers and caissons, (12) Shotcrete, (13) Special grading, excavation and filling, (14) Fire-protection system, (15) Special cases (specify), (16) Sheathed shear walls and diaphragms, (17) Complete load path and uplift ties, (18) Termite protection, (19) Other as specified by the DOTA PM.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

7.5 Submittals

7.5.1 The DOR shall receive, review, comment or approve all construction **Submittals** for conformance with the design concept and compliance with the **Bid Documents**. Format, requirements and procedures for all **Submittals** shall be defined in the project specifications. **Submittals** shall include:

7.5.1.1 Shop drawings.

7.5.1.2 Product and catalog cut-sheets.

7.5.1.3 Color and material samples.

7.5.1.4 Test laboratory and mill data sheets.

7.5.2 The DOR shall be responsible to identify and designate the related disciplines associated with each submittal and coordinate a timely review. Shop drawings shall bear all reviewing discipline's approval stamps.

7.5.3 Submittals shall be returned to the CM within two (2) weeks or as stipulated in the specifications.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

7.6 Clarifications and Changes to the Work Scope

7.6.1 Request for Information (RFI)

- 7.6.1.1 The DOR shall assist the DOTA PM with providing support information and documentation to the General Contractor's requests for information (RFI).

7.6.2 Post Contract Document (PCD)

- 7.6.2.1 The DOR shall identify and inform the DOTA PM when the information requested by the General Contractor will result in a PCD to the **Bid Documents**.
- 7.6.2.2 The DOR shall receive approval from the DOTA PM to create PCD for distribution.
- 7.6.2.3 The PCD shall be reviewed and approved by the DOTA PM prior to issuance to the General Contractor. **ONLY DOTA shall issue PCD to the General Contractor for Cost Proposal (CP) request.**

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

7.7 Project Completion

7.7.1 Pre-final / Final walk-thru and Punchlist

7.7.1.1 The DOR shall attend a pre-final and / or final walk-thru of the completed construction to verify conformance of the work with the requirements of the **Bid Documents**. Any discrepancies or workmanship defects shall be identified and documented on the punchlist.

7.7.1.2 The pre-final and / or final walk-thru will be scheduled by the CM.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

8. Post Construction Services

- 8.1 General
- 8.2 Warranty Review Services
- 8.3 Record Drawings and Specifications Verification
- 8.4 Post-Occupancy Evaluation

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

8. Post-Construction Services

8.1 General

8.1.1 The DOR may be contracted to perform additional Post-Construction Services after construction completion.

8.1.2 The DOTA PM shall determine if Post-Construction services are required.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

8.2 Warranty Review Services

- 8.2.1 The DOR may perform inspection of materials, systems and equipment several months before the warranty expires to determine and evaluate its condition or adequacy of performance.
- 8.2.2 The DOR shall document defects or deficiencies observed or documented by Airports maintenance. The DOR shall assist the DOTA to recommend and initiate the methods to implement corrective measures with the pertinent parties. These may include documentation to the companies who installed the items or their manufacturers.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

8.3 Record Drawings and Specifications Verification

- 8.4.1 The DOR shall transpose the General Contractor's field markups, as reviewed and approved by the CM, to the original Bid Documents. This shall become the "official" Record Drawings to be submitted to the DOTA for file.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

8.4 Post-Occupancy Evaluation

8.4.1 The DOR shall provide **Post-Occupancy Evaluation** services. This involves a systematic review of the facility after it has been constructed and occupied for enough time to have established a well-stabilized operational experience. These services consist of a project inspection by the DOR team at a time established by the DOTA PM (approx. ten months after the construction is completed).

8.4.2 **Post-Occupancy Evaluation** shall include:

8.4.2.1 A project tour.

8.4.2.2 Interviews with appropriate supervisory, operation and maintenance personnel.

8.4.2.3 Analysis of operating costs and related data for evaluation of:

8.4.2.3.1 The intent of the project versus actual use.

8.4.2.3.2 The functional effectiveness of planned spaces.

8.4.2.3.3 The operational effectiveness of systems and materials.

8.4.2.3.4 The efficiency of the design and construction delivery process.

8.4.2.3.5 The operating condition of all guaranteed and warranty equipment items.

8.4.2.4 The DOR shall provide a performance evaluation for the facility, incorporating functional reviews, technical compliance and the interpersonal human resource effectiveness.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

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Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

9. ADDITIONS / MODIFICATIONS / REVISIONS TO THE SCOPE OF WORK

9.1 General

- 9.1.1 If additions / modifications / revisions to the scopes or work as listed in this document are requested by the DOR, the DOR shall submit in writing the requested modifications. The DOR shall use the SCOPE OF WORK ADDENDUM FORM format to list the requested changes and / or additions. The SCOPE OF WORK ADDENDUM FORM shall be submitted as part of this document in this section.
- 9.1.2 The DOTA PM reserves the right to accept / deny / modify any and all requests for changes.

Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

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Pre-Design	Design Effort				Advertising & Bidding	Construction Admin	Post Construction
	Conceptual Design (0-15%)	Schematic Design (16%-30%)	Design Development (31%-60%)	Construction Documents (61%-100%)			

APPENDIX

APPENDIX A

Document Phase Identification Title Block

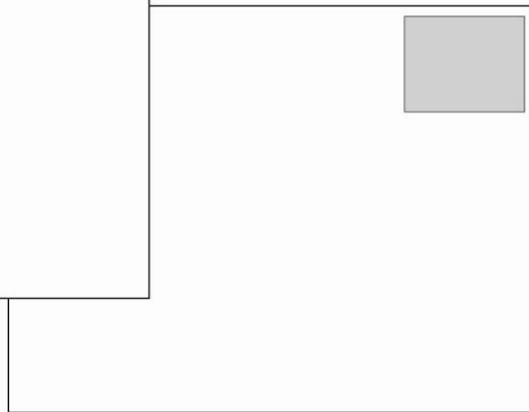
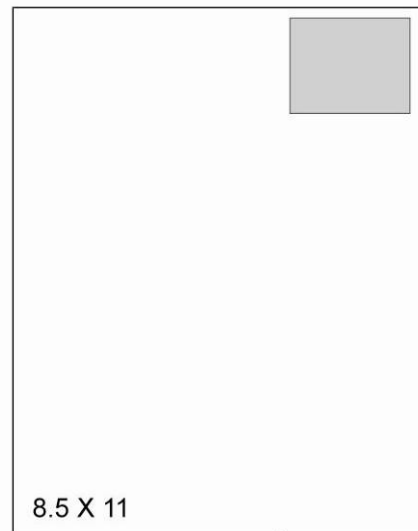
DOCUMENT PHASE IDENTIFICATION TITLE BLOCK

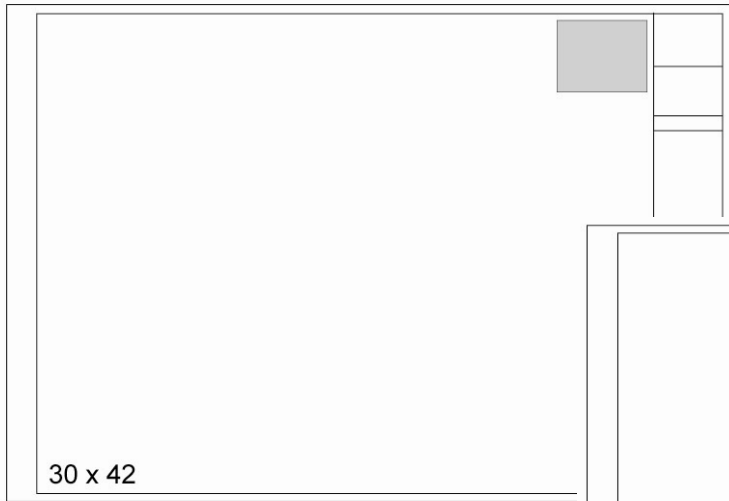
The Document Phase Identification Title Block shall be placed near the upper right hand corner, on the title or cover sheet of all document submittals. The Document Phase Identification Title Block shall include:

- Project phase
- Project name
- Project number
- Who it is being submitted by
- Date of original submittal
- Indication of following revisions & date

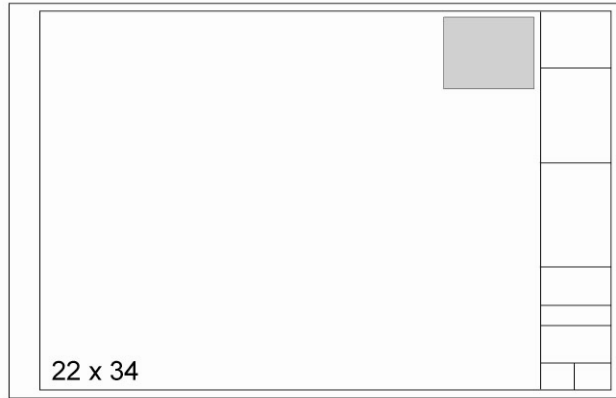
8.5" x 11" and 11" x 17" documents shall be formatted with a 2.5" x 2" title block.

2 1/2"		
2"		
PHASE: SCHEMATIC DESIGN		
PROJECT NAME:		
PROJECT NO.:		
SUBMITTED BY:		
DATE SUBMITTED:		
REV. NO.	DATE	EVENT





22" x 34" and 30" x 42" documents shall be formatted with a 5" x 4" title block.



5"			
4"	PHASE: SCHEMATIC DESIGN		
	PROJECT NAME:		
	PROJECT NO.:		
	SUBMITTED BY:		
	DATE SUBMITTED:		
	REV. NO.	DATE	EVENT

APPENDIX B

DOTA Document Submittal Application Form



State of Hawaii
Department of Transportation - Airports Division
Honolulu International Airport

DOCUMENT SUBMITTAL APPLICATION FORM

PROJECT INFORMATION	To be filled in by the State:
Project Name:	Date Received:
Project Number:	
Project Location:	

DESIGNER OF RECORD	
Company Name:	
Person of Contact:	Phone No.:
Email Address:	
Address (No., Street):	
Address (City, State, Zip Code):	

DESCRIPTION OF WORK TO BE DONE (Check 1 box and describe below):	
<input type="checkbox"/> Conceptual Design <input type="checkbox"/> Design Development <input type="checkbox"/> Other: _____	
<input type="checkbox"/> Schematic Design <input type="checkbox"/> Construction Documents	
Description:	

DESIGNER OF RECORD SIGNATURE	
Signature:	Date:
Print Name:	Title:

APPENDIX C

DOTA Document Review Comment Sheet



State of Hawaii
Department of Transportation - Airports Division

DOCUMENT REVIEW COMMENT SHEET

Project Name: _____ Date: _____
Reviewed By: _____ Project No.: _____

Contact Information:

Company: _____
Name: _____ Title: _____
Address: _____
Email address: _____ Ph. No.: _____

Comments:

Action Taken:

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APPENDIX D

DOTA Reviewed Stamp

Example of DOTA REVIEWED Stamp:

DOTA REVIEWED	
<input type="checkbox"/>	NO EXCEPTIONS TAKEN, SUBJECT TO COMMENTS ON SUBMITTAL
<input type="checkbox"/>	REVISE & RESUBMIT
<p>This review is for general conformance with the contracted project scope of work. The review does not legally relieve the Design Professional of his obligations under the Statutes, Ordinances, Codes or Regulations and other governmental agencies having jurisdiction over this project.</p>	
<p>By: _____</p>	
<p>Date: _____</p>	

The Stamp location on submitted documents:

1. The “**DOTA REVIEWED**” stamp shall be placed, by the DOTA PM, on the title or cover sheet of all reviewed booklets, forms, manuals, studies, calculations, drawings, etc.

APPENDIX E

State of Hawaii Department of Transportation Signature Title Block

Example of the State of Hawaii Department of Transportation
Signature Title Block:

DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	
APPROVED:	
_____ DIRECTOR OF TRANSPORTATION	_____ DATE

The State of Hawaii Department of Transportation signature title block shall be placed on all **Corrected Final Submittals** (see Department of Transportation Airports Division Consultant CAD guidelines, January 2009).

APPENDIX F

Scope of Work Addendum Form

SCOPE OF WORK ADDENDUM FORM

The following scopes or work or services listed hereinafter are hereby made part of this contract:

[illegible]

